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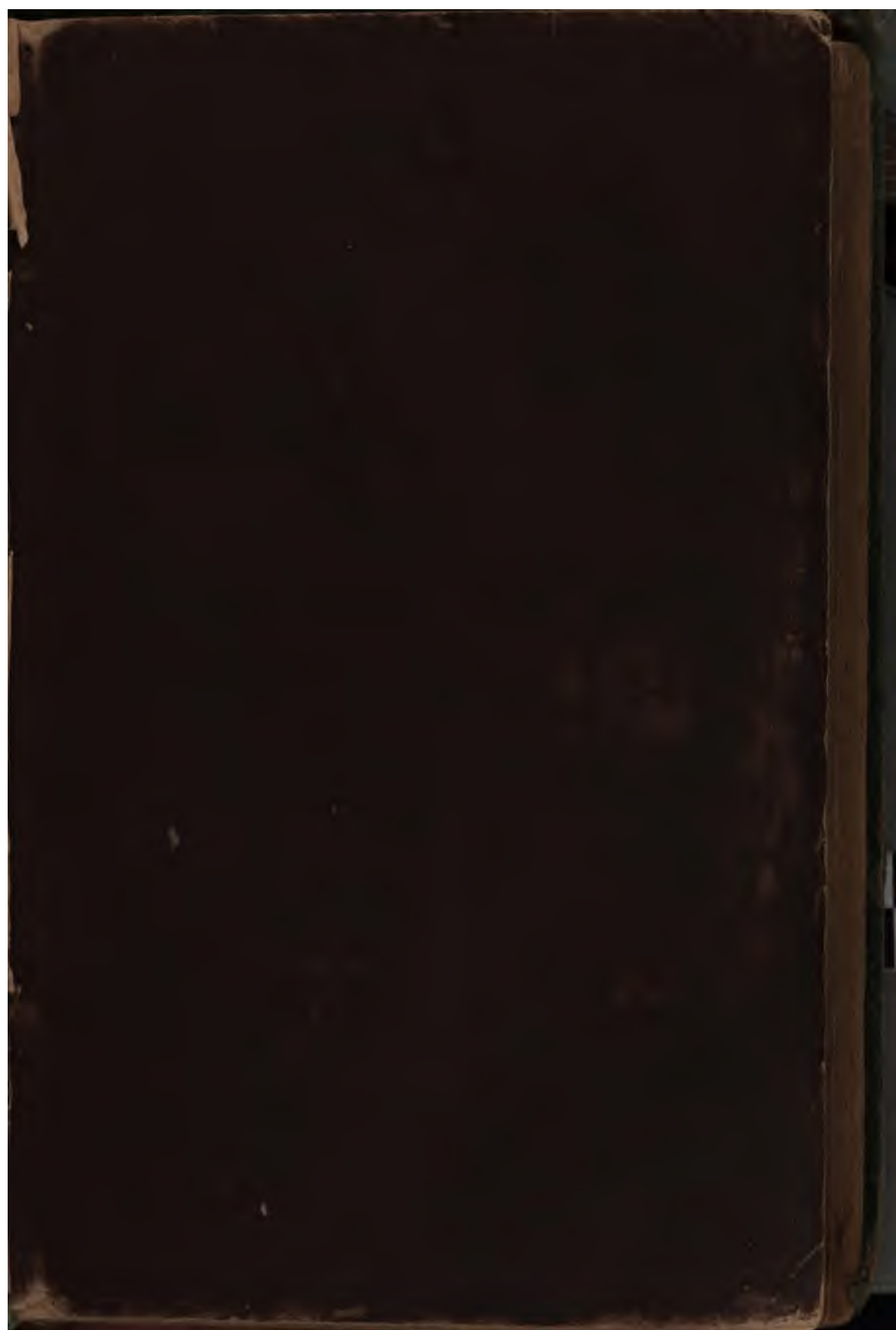
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A. A. P. 1820

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the 1990s, the number of people in the world who are illiterate has increased from 750 million to 850 million. The number of illiterate people in the world is expected to increase to 900 million by the year 2015. The number of illiterate people in the world is expected to increase to 950 million by the year 2020. The number of illiterate people in the world is expected to increase to 1 billion by the year 2025. The number of illiterate people in the world is expected to increase to 1.1 billion by the year 2030. The number of illiterate people in the world is expected to increase to 1.2 billion by the year 2035. The number of illiterate people in the world is expected to increase to 1.3 billion by the year 2040. The number of illiterate people in the world is expected to increase to 1.4 billion by the year 2045. The number of illiterate people in the world is expected to increase to 1.5 billion by the year 2050. The number of illiterate people in the world is expected to increase to 1.6 billion by the year 2055. The number of illiterate people in the world is expected to increase to 1.7 billion by the year 2060. The number of illiterate people in the world is expected to increase to 1.8 billion by the year 2065. The number of illiterate people in the world is expected to increase to 1.9 billion by the year 2070. The number of illiterate people in the world is expected to increase to 2 billion by the year 2075. The number of illiterate people in the world is expected to increase to 2.1 billion by the year 2080. The number of illiterate people in the world is expected to increase to 2.2 billion by the year 2085. The number of illiterate people in the world is expected to increase to 2.3 billion by the year 2090. The number of illiterate people in the world is expected to increase to 2.4 billion by the year 2095. The number of illiterate people in the world is expected to increase to 2.5 billion by the year 2100.

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PRESENT
CONFLICT OF SCIENCE

WITH THE

CHRISTIAN RELIGION;

OR,

MODERN SCEPTICISM MET ON ITS OWN GROUND.

BY

HERBERT W. MORRIS, A. M.,

FORMERLY PROF. OF MATH. IN NEWINGTON COL. INST., AUTHOR OF "SCIENCE AND THE BIBLE," ETC.

Every one wishes to have the Truth on his side; but it is not every one that sincerely wishes to be on the side of Truth.—WHATELEY.

ILLUSTRATED WITH
MAPS AND ENGRAVINGS ON STEEL AND WOOD.

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PREFACE.



THE Bible, though not given to teach physical science, yet is closely connected with it in all its branches. Its revelations, narratives, predictions and lessons traverse every province of nature, and are more or less interwoven with nearly all its facts and phenomena. This sacred book, therefore, is open and exposed to scientific scrutinies, tests and criticisms on every side, and of every character; and it has, in fact, already passed through ordeals of this sort of such severity as no other book in existence has encountered.

The means and method of assailing the Bible have changed with the changes of time. With the progress of light and investigation, old grounds and old weapons have again and again been abandoned, and new ones taken up. Such a change of arms and tactics has taken place in our own day; and the coming on of this new order of warfare was long since foreseen by those wise to discern the drift of the human mind. Twenty-five years ago Hugh Miller ventured the assertion: "The battle of the Evidences will have as certainly to be fought on the field of physical science, as it was contested in the last age on that of the metaphysics."

That prediction was true; it is now being fulfilled. The conflict on this ground has already for a length of time, been waged with persistent energy. Every object and element on the field of science, which learning and ingenuity could convert into an ally or a weapon against the Sacred Volume, has been seized,

The developments of geology have been arrayed against the Mosaic account of the creation. The facts of natural history have been marshalled to overthrow the doctrine of man's creation in the likeness and image of God. Anatomy and physiology have been employed to destroy belief in the unity of the human race, and to establish for its different branches so many distinct origins. Archæology has been pressed into the service to bring up from caves, or mounds, or catacombs, relics, no matter of what sort, if they could be employed to undermine or to oppose the statements of holy writ. Philology has been tasked to its utmost ability to carry back to an immeasurably distant past the origin of mankind, by attempting to prove that the languages they speak are the slow growth of many tens of thousands of years. The laws of nature have been tortured to give evidence against the providence and even the presence of God in the world. In short, nothing has been passed by that promised in anywise to aid in the overthrow of "the Old Book."

As a result of all this, we perpetually hear it affirmed, in private conversation and public lectures, and see it printed in daily journals and monthly magazines, that the discoveries of science are in *collision* with the statements of Scripture. Isolated facts, facts imperfectly studied, facts misinterpreted, and facts invested with fictitious significance and importance, are paraded under the imposing name of science, and boldly put forth as conclusive evidences, for the discomfiture of Christians. Every difficulty connected with the Bible, real or imaginary, is loudly proclaimed, often magnified. The doubtful inferences of biased criticism, and the mere theories of speculative philosophy are delivered with assurance as so many established truths. And the attempt is industriously made to create the impression that "the world" is gone after these errors.

The consequences of all this are but too obvious. It has had its effects. As the continual dropping of water will wear away

the stone, so the constant application of such influence does tell, has told, not only on minds less vigorous or less cultivated, but also on those more active and intelligent. It has served to awaken doubts where no misgivings existed before. It has made errors familiar, and their acceptance comparatively easy, where formerly they would have shocked and been repelled. Many have been moved from the simplicity of their early faith in the Scriptures, and now follow their guidance with faltering steps. Many others have been rudely shaken from their once cherished convictions, and live on in a sad mixture of doubts, hopes and fears; their wonted peace has been destroyed, though their faith may not have been altogether overthrown. While not a few, it is to be feared, have been brought to settle down in hopeless scepticism. And this leaven of iniquity is daily extending its pernicious influences.

The present volume has been written to meet this state of things. Encouraged by the reception his late work on a kindred subject, "*Science and the Bible*," has met with—ten large editions having been called for within three years from its publication—the author undertook the preparation of this work from the desire and with the hope of furnishing thoughtful and inquiring readers with an antidote to these prevailing errors, of calming down the anxieties of Christian people, and of reassuring those who have been disquieted that the foundation of their faith still standeth strong.

This the writer undertakes to do, not by denying or ignoring the sound deductions of science, for he accepts them, but by the light of established facts and the force of uncontroverted truth. He attempts not to offer any apologies for the Bible, for it does not need them. He appeals for no leniency at the hands of its enemies, for that were vain. He seeks not to shield it from the investigations of science, for that would be equally futile and unwise. He believes that this Book is able to bear all the light that human science can concentrate and make to fall upon it, and

that the stronger that light is the more manifestly will its Divinity shine forth. He therefore bids science God-speed in its noble studies, assured that the Works of God will never be found in conflict with his Word.

It will be noticed, and perhaps made a point for criticism, that the *title* given to the work is not in harmony with this sentiment, but stands opposed to it and to the drift of the whole volume. This, in a sense, is true. But as *The Conflict of Science with Religion* has become a current expression for the vital question of the day, it has been judged that this title correctly sets forth the subject to the discussion of which the book is devoted, whilst the sub-title sufficiently indicates on which side of the question the author stands.

The main points of difficulty that have been urged against the Bible, on scientific grounds, are here presented, and discussed in their most recent aspects.

In the preparation of the work the author has all along consulted, on both sides of the questions, the leading authorities, not only in America, but also in England, France and Germany.

The facts connected with the various subjects that come under consideration are, in every case, brought down to the present day.

In composing the work it was found impracticable, without a burdensome multiplication of words, to avoid altogether the use of *scientific terms*. As these may prove in some degree an embarrassment to plain readers, a list of them, with their significations, has been placed at the end of the volume.

Of the need and importance of such a work as the writer has here undertaken he has no doubt whatever; but how successful he has been in accomplishing it he must leave to the decision of his readers.

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UNITY OF CREATION

AND

THE TEACHINGS OF JESUS OF NAZARETH.

"I am come a Light into the world." He came forth from the bosom of the Father, as the Word, the Revealer of that Infinite Mind in which, from eternity, He had surveyed the Archetype and idea of all truth; and He spoke with the authority of a divine oracle.—DR. JOHN HARRIS.

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- I. THE GODS MANY AND THE LORDS MANY OF THE ANCIENT HEATHEN:
THEIR IDEAS OF THE ORIGIN AND GOVERNMENT OF THE WORLD.
- II. JESUS OF NAZARETH PROCLAIMS THE EXISTENCE OF ONE ONLY TRUE
AND LIVING GOD, THE CREATOR AND RULER OF ALL.
- III. THE TEACHINGS OF JESUS CONFIRMED BY MODERN SCIENCE: EVIDENCES
THAT THE EARTH AND THE WHOLE UNIVERSE ARE THE WORK OF
ONE SUPREME OMNIPOTENT BEING.



UNITY OF CREATION

AND

THE TEACHINGS OF JESUS OF NAZARETH.

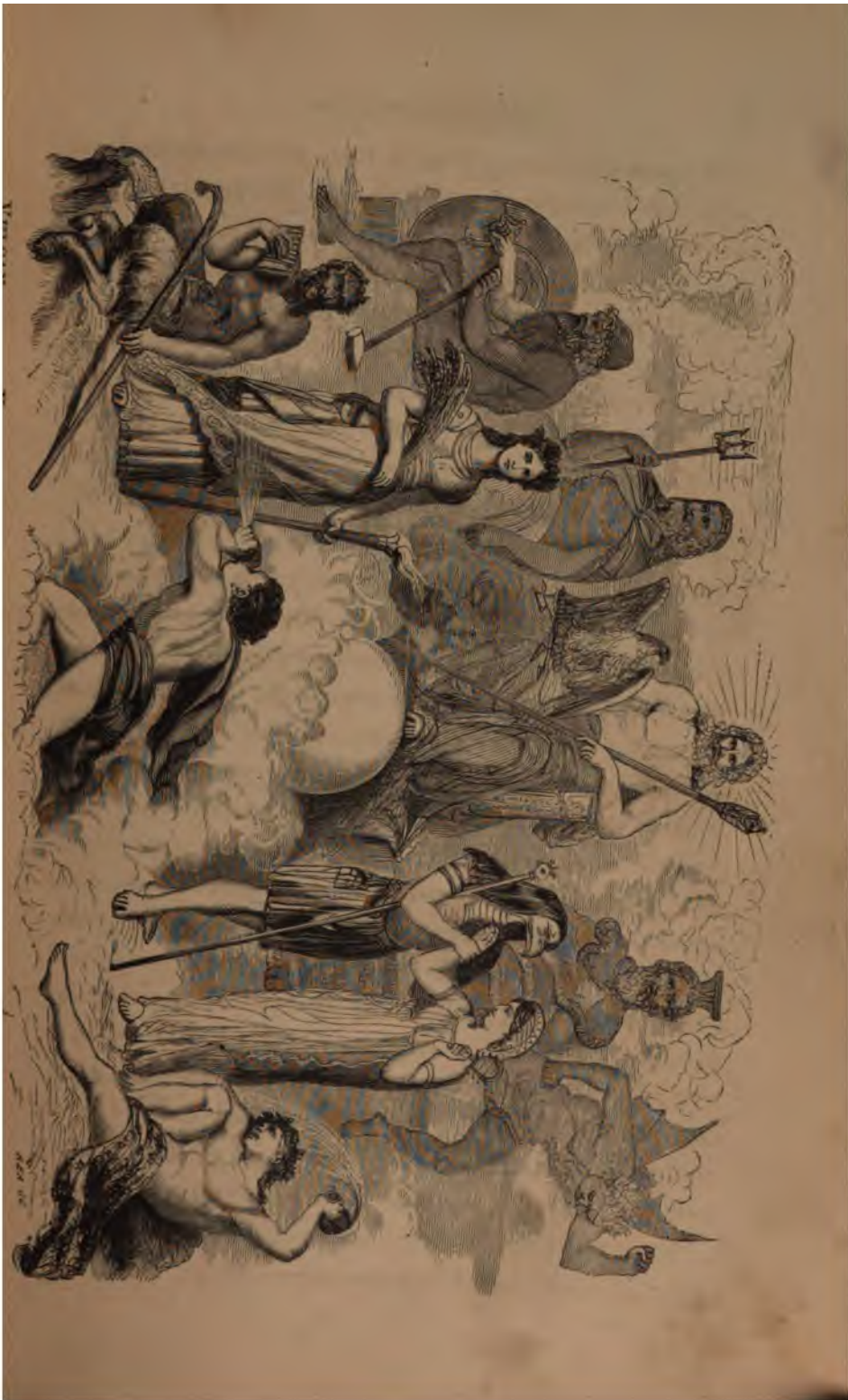
I.

EIGHTEEN hundred years have rolled by since the system of truths, embodied and preserved in the New Testament Scriptures, was proclaimed to the world by Jesus of Nazareth and his chosen disciples. The moral and religious condition of mankind, at that period, was truly deplorable; in every region, and under every rule, they were fettered and held in melancholy bondage by ignorance and superstition of the most degrading character. Darkness covered the earth, and gross darkness the nations. The most favored and the most enlightened among them groped, as the blind for the wall, after the truth concerning the origin of the world, the powers that ruled over it, and the destiny of the race inhabiting it. Earnest, and often heroic was the struggle of natural intellect for the light; but all their inquiry, observation and philosophy left them in fatal error, or, at best, in painful obscurity, on all these

momentous questions. Even a Plato was constrained to begin his discourse of the gods, and the generation of the world, with the caution to his disciples, "not to expect anything beyond a likely *conjecture* concerning these things." And a Cicero, after ages more of investigation and subtle reasoning, was forced to the confession, "All these things are involved in deep obscurity."* The last and highest effort of Grecian philosophy was to erect an altar to the "unknown God." Thus the world by all its wisdom failed to attain to any clear or certain knowledge of the true and living God.

Equally ignorant were they concerning *the origin of the world* in which they dwelled. The sages and philosophers of antiquity, without an exception, believed that the earth, as to the materials composing it, at least, was eternal. *Creation*, or the originating of anything from nothing, appeared to them an absurdity—an act inconceivable, and impossible even to the gods. They held it as an indisputable axiom that "out of nothing nothing could be made." Hence some of them taught that deep in darkness, far beyond the refulgent expanse, the abode of deities, matter had ever lain, a rude and undigested and opaque mass, agitated by turbulent and irregular motions of its own provoking, and nurturing, as in a seed-bed, the rudiments of plants, birds, beasts and man, and even of every species of vice and evil. Others maintained that the universe arose out of a fortuitous concourse of eternal atoms; these, moving at hazard,

* Compare, *De Natura Deorum*, Lib. I.





produced by their constant meeting a variety of substances, and finally organized forms. Others still held that the world both as to matter and form had existed without beginning, as they then beheld it; "The universe," they said, "is an eternal effect of an eternal cause."

As to the *government*, or *providence* that was over the world, the general belief was, that all things were subordinate to an association of powerful spirits, which were called *gods*. One of these, their *deus maximus*, was supposed to excel the rest in dignity, and to possess supereminent authority, and assigned to the inferior ones their dominions and offices. His rule over them, however, was regarded as little more than nominal, as he could not legitimately invade their provinces, nor effectually frustrate their designs. Though this idea of associated gods was common, yet every nation held not to the same gods, but each had its particular deities, differing more or less from those of other countries, not only in their names, but in their nature, attributes and actions. Rome, indeed, claiming to be the mistress of the world, became also the pantheon of the world, and the asylum of deposed and fugitive gods from among all nations. Thus there were "gods many, and lords many," even past all enumeration.

The Greeks and Romans named their chief deity *Jupiter*, whose empire was in the aerial regions; while *Neptune* ruled over the seas, and rivers, and fountains; *Vulcan* over burning mountains and fires; *Æolus* over the winds; *Bacchus* over the trailing and fruitful vines;

Pan over the hills and pastures, herds and flocks and bees; *Ceres* over grain, harvests, etc. Hence, it was deemed necessary for those who would ensure protection, success and happiness, religiously to cultivate the patronage of every separate deity, and assiduously to pay that homage to each of them which they respectively claimed. Yet sometimes the gods would quarrel among themselves, and the worshipper in propitiating one would incur the displeasure of another, equally or more powerful. Hence incertitude, timidity and gloom oppressed the common mind, and not unfrequently rendered life a burden.*

The Celts selected for the objects of their adoration a set of ancient *Heroes* and *Leaders*, whose memory, so far from being illustrious for virtue, came down to them disgraced with vice, and loaded with infamy. Their fictitious history was a tissue of superhuman abominations, and the rites of their worship for the most part revoltingly unclean.

The Egyptians, whose civilization, arts and sciences antedate recorded history, made similar characters their gods, such as *Osiris*, *Serapis*, *Typhon*, *Isis*, and others; with the worship of these was joined that of the *Constellations*, the *Sun*, the *Moon*, the *Dogstar*, *Animals* of every kind, even voracious and venomous *Reptiles*. And the worship they paid such deities was absurd, corrupting and disgraceful to the last degree.†

The Chaldeans and Persians believed in one supreme

* Comp. both the *Iliad* of Homer, and the *Æneid* of Virgil, *passim*.

† See Jablonski's *Pantheon Ægyptiorum*.



BUDDHA.



BRAHMA.

VISHNU.

SIVA.

divinity, *Mithra*, under whom were two others of inferior order, *Oromasdes* and *Ariman*, the former the author of light, intelligence and all good; and the latter of darkness, and of whatever is gross, or the cause of evil.

The Hindoos from very remote antiquity embraced the system of religion called *Brahminism*, involving the worship of their three principal gods, *Brahma*, *Vishnu* and *Siva*. It was in form and in essence an enormous polytheism, if, indeed, it was not rather true *Pantheism*; for it taught that at the end of every *Calpa* (formation) all things are absorbed in the Deity, and that at a stated time the creative power would again be called into action.

The Chinese, and other nations of eastern Asia, followed *Buddhism*, their principal god being *Buddha*; it was in effect little else than sheer Atheism. Its highest reward of piety, and its object of most earnest desire and pursuit, was extinction of being, or annihilation.

Such, in brief, were the prevailing religions of the most enlightened nations of the world at the time of our Saviour's advent. And these were the views and creeds, not of the unreflecting and ignorant only, but also of the most intellectual and enlightened—of poets, philosophers and legislators—of those who were the pride of their time, and the boast of their species. *Socrates*, while he uttered many sublime sentiments of a moral and religious nature, yet believed in a plurality of objects of worship, and expressed it as his conviction, that a wise and good man ought to worship the gods recognized by the country to which he belonged. His disciple and intimate friend

Xenophon declares of him, that he never undertook any work without first taking counsel of the gods. And his last request was that an offering he had vowed to Esculapius might be paid for him by his friends. The illustrious names of *Zeno*, *Cleanthes*, *Epictetus*, and *Marcus Antoninus*, stand connected with a religious system, Stoicism, which, while it recognized in some sense a Supreme Being, drew no intelligible distinction between God and matter; which made Fate a prime article of faith, and affirmed that "when death is we are not." The religious sentiments of *Seneca* were of no higher type: "whatever that be," he said, "which has determined our lives and our deaths, it binds the gods also by the same necessity; human and divine things alike are carried along in an irrevocable course." *Epicurus*, though a man of most vigorous intellect, and the author of many wise, excellent and exalted sentiments, maintained that the universe accidentally arose from a cloud of dust, that the gods were indifferent as to human affairs, or rather, entirely unacquainted with them. And *Aristotle* taught that "the chief deity resides in the celestial sphere, and observes nothing, and cares for nothing beyond himself."*

From all this we plainly see that even those individuals, who were endowed with a superior degree of intellectual power, and who occasionally obtained a glimpse of the truth, and of the right path, were unable to proceed in it, but ever and anon lost themselves in the mazes of doubts

* See Brucker's *Historia Philosophiæ Critica*.

and errors, and disfigured what little they had acquired of sound wisdom, by an admixture of the most extravagant and absurd opinions. Left to its unaided struggle, helpless and forlorn, indeed, was the condition of our race.

II.

FROM this dark and desolate aspect of mankind, which presents itself to us alike in the valley of the Nile and on the plains of India, amid the temples of Greece and the palaces of Rome, let us now turn to another field—a field to which the great Names, whose sentiments we have now reviewed, would have scorned to look for light, or wisdom, or anything else great or good. It is the small and impoverished province of Judea, occupied by a subjugated and despised people. Here we behold a man, plain and lowly, reared amid the toil and poverty of an obscure village, going forth and discoursing to delighted multitudes on the profound subjects, which all the wisdom of sages had failed to illumine or relieve. This is *Jesus of Nazareth*. Let us listen to a few of his sublime enunciations. Without wealth, power, or prestige to support him, we hear him proclaim to the world with the calmness of assured knowledge and of conscious authority, in opposition to the philosophies and religions of all nations, that—

There is none good but One, that is God.

All things were made by Him; and without Him was not anything made that was made.

He upholdeth all things by the word of his power, and by Him all things consist.

He maketh his sun to rise on the evil and on the good, and sendeth rain on the just and on the unjust.

He feedeth the fowls of the air ; He arrays the lilies of the field as was not Solomon in all his glory.

A sparrow shall not fall on the ground without your Father ; the very hairs of your head are all numbered.

He is the God and Father of all ; in Him all live, and move, and have their being.

He is the King eternal, immortal, invisible ; the only wise God, whom no man hath seen, nor can see.

Of Him, and through Him, and to Him, are all things : to whom be glory for ever. Amen.

Thus, in all places, throughout his ministry, and by all his apostles, Jesus Christ proclaimed in the face of the world, and in the midst of the hoary idolatries of the earth, that there is but one God, true and living and wise and powerful ; that none shared with Him at the *first* in the creation of the universe, that none *now* share with Him in its government ; that He hath made all things, and that for his pleasure they are and were created. This was a doctrine that was new and surprising to the nations of the earth—a doctrine such as was never broached in the Academies of Greece, never heard in the Forum of Rome, never whispered by the oracles of Arcadia, Delphos or Dodona—a doctrine, indeed, far in advance, and far above all the wisdom of the world. In *this*, Jesus of Nazareth stood alone in his teaching. No other instructor had ever put forth, or ever conceived

such exalted views of God, or of creation, or of providence.

And now the great question is, Was He right? Are we to receive his testimony, single and alone, against the sentiments and practices of the whole world? Was his teaching according to fact and truth? Is it sustained and confirmed by the light of this nineteenth century?—We answer, YES; COMPLETELY AND IN ALL PARTICULARS.

No fact has been more clearly demonstrated by modern research, than that the Creation is one in its origin, one in its government, and one in its end. The heathen, we have seen, placed a separate god, of distinctive character and aims, to preside over every particular province and element of nature; but, as the GREAT TEACHER utterly discarded, so the light of modern science has wholly dissipated these phantoms, by revealing one general plan, and the same general laws, running throughout every region and department of the universe. And now to the proof of this.

III.

LET us take a general survey of the globe we inhabit. And what do we find in evidence that all its parts and elements are the productions of one hand, and under the government of one mind? The same sun illumines the day, and the same moon cheers the night, in every land. The same atmosphere envelopes the whole earth, and the same ocean-waters begirt and beat upon its thousand sinuous shores. The tides rise and fall, and the rivers

form and flow after the same manner wherever we go. Seed-time and harvest, cold and heat, summer and winter, and day and night, pursue their unwearied rounds for all nations, and for all time. Nowhere do we find or feel ourselves to have passed into the dominion of another and a different god.

The grand elements of nature move and operate according to the same uniform laws, the world over. Whether we traverse the plains, climb the mountains, sail upon the seas, dive into caverns, or ascend into the clouds, we find these laws in undeviating operation. Not an element moves capriciously, not an atom floats at random. Gravitation exerts its power according to the same rule, gases combine in the same proportions, metals fuse and liquids boil at the same points of heat, light is reflected and refracted at the same angles, heat is radiated and the air is condensed or rarefied after the same laws, and dew and rain and snow are produced under the same circumstances and according to the same process—whether we stand on this or that side of the globe.

The electric, magnetic and vital forces are likewise invariable in their action. The Needle elects its position, the fiery fluid of the clouds recovers its equilibrium, and life puts forth its powers, in the same way, wherever we go. Atoms cohere to atoms, and unite to form the crystal, or coalesce to produce the green blade, or aggregate to build the lordly tree, or blend to put forth the painted and perfumed flower, or combine to yield the luscious fruit—under the impulses of the same mysterious laws, from the rising to the setting sun.

In like manner, one vast and magnificent plan runs and ramifies throughout the animal kingdom. While ten thousand varieties and innumerable minor distinctions prevail, all animated beings belong to this one system, and are related one to another as are the various members of one animal body. So uniformly is this plan of animal structure followed that, give to a Cuvier or an Owen a single bone, a single tooth, and he will be able to tell to what class of animals the owner belonged, and even what its character, its food, and its general habits were. The fowl and the fish, the carnivorous and the ruminant, the quadruped and the biped, retain and exhibit their distinctive peculiarities in every quarter of the globe.

Modern investigation has gone still further, and proved that every province, element and agency of creation are connected with every other province, element and agency, that nothing stands isolated or alone, but that all form one grand and complete whole. Sea and land and air are closely related and mutually dependent. The expanse of the ocean has been proportioned to the extent of the continents, while the atmosphere has been constituted to form a medium of direct and ceaseless communication between them. The waters of the deep ascend in perpetual exhalations into the atmosphere, the atmosphere collects these into clouds, the clouds are borne along by the winds and condensed by the cold into rain, the rain descends in showers on the plains and the mountains, part of it is retained to nourish their vegetation and living tenants, and part flows together

and returns by the rivers to the ocean, to commence the same circuit again. Such are the connections and mutual adaptations of all these elements and agencies, fitting as wheel into a wheel, and pursuing their magnificent round of operation without waste, or weariness, or cessation.

A thousand other bonds of relation and adjustment exist between the ground under our feet and the firmament over our heads. Every plant and tree and blade of grass is such a bond; each of these with its roots takes hold of the soil, and draws from it its food, while with its leaves it maintains communication with the atmosphere. Every bird, and beast, and human being, is also a similar bond; while these derive their nourishment from the ground, they inhale the vital fluid from the air. Add to all this, their lungs, their ears, their organs of smell, their organs of speech, and even the pores of their skins are made for the atmosphere, and the atmosphere is made for them, being so constituted as ever to serve the purposes and meet the necessities of all these with promptness, facility and pleasure.

Nothing can indicate more clearly the unity of creation than the balancings of its different departments, as these depend upon the most skilfully arranged adjustments. Of this many striking instances at once present themselves. The ground is constituted to absorb heat from the sunbeams, and to retain it till night comes on, when it gives it out again, and thus its temperature is most admirably equalized. Again: the grass and the leaves absorb heat during the day, and again radiate it

into the clear atmosphere at night, till they are so reduced in temperature as to condense the moisture floating in the air into the dew-drops necessary to refresh and nourish them. And again: animals breathe oxygen, and in their exhalations set carbonic acid free for the use of plants; and plants through the pores of their leaves imbibe this carbonic acid, and in return set oxygen free for the benefit of animals. Thus animals and plants balance one another to their mutual benefit, by the preservation of the atmosphere in its purity. And when both the plant and the animal have run their course, and die, the soil stands ready to receive their grosser materials, and the atmosphere to resume their more ethereal substances, which they had before respectively contributed to rear their organizations; and, having renovated them, each is prepared to bestow them again on other and new plants and animals. In this way the Great Ruler of all unfolds and carries on that beautiful round of being, in which every link maintains its place and importance, and the happiness of every part flows from the harmony of the whole.

“Look round the world! behold the chain of love
Combining all below and all above.
See plastic nature working to this end;
Atoms to atoms—clods to crystals tend,
See dying vegetables life sustain;
See life, dissolving, vegetate again.
All served, all serving, nothing stands alone,
The chain holds on, and where it ends unknown.”

Nothing, therefore, like the diversity of plan, or the divided dominion, or the conflicting authority of different

gods, such as heathen poets and philosophers vainly imagined, appears in all the earth, the ocean, or the atmosphere.

But our chain of evidence to the unity of creation does not terminate with our own globe. Though the earth is a separate and distinct world, yet it has its connections and relations with other worlds; and we now advance to contemplate these evidences in the loftier realms of the universe.

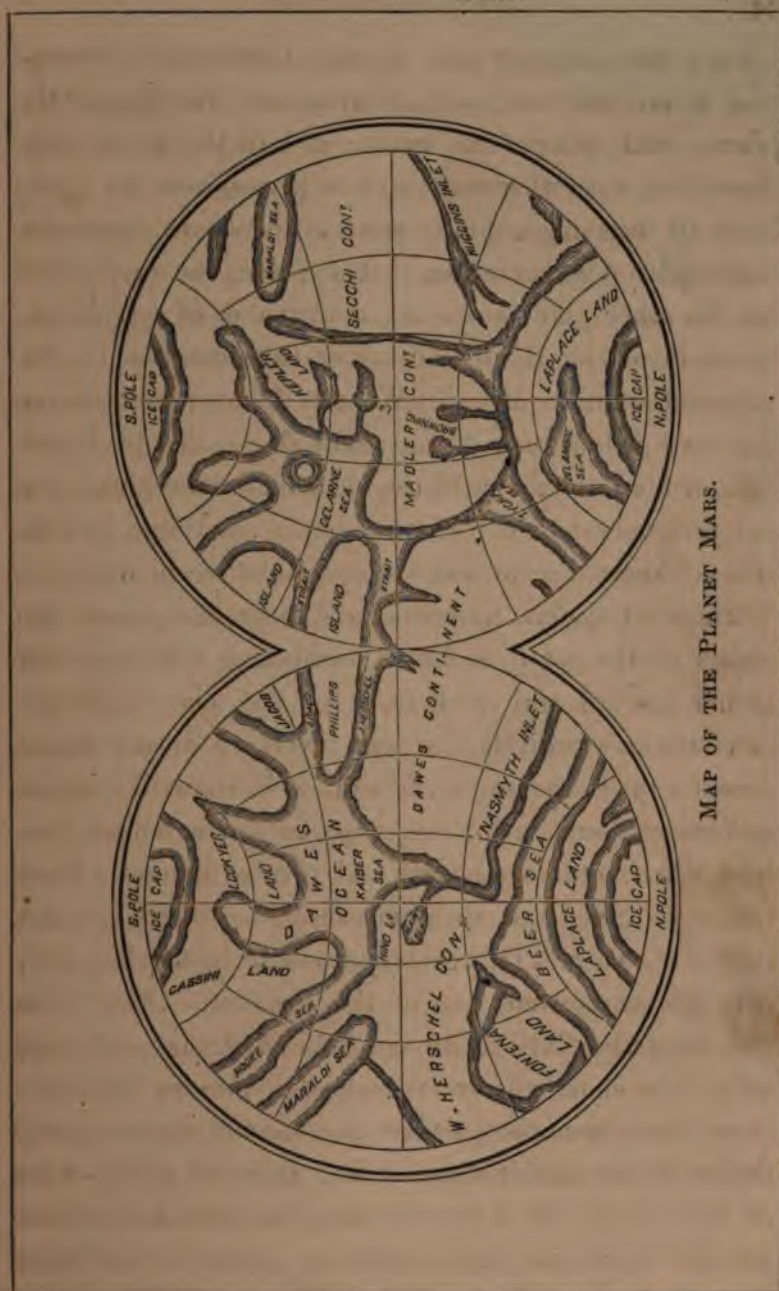
The earth is a dependent satellite of the sun; it could not have existed before the sun, any more than the eye before the head; nor could it now continue to exist without him save as a mass of cold and dark and dead materials. The welfare of our world—the welfare and existence of all terrestrial plants and animals are dependent upon the seasons, and the alternation of light and darkness; but these again are dependent upon the earth's twofold revolution in reference to the sun; by the mighty power of the sun's gravitation its yearly circuit is accomplished. And from the sun comes down to us our light and heat and other essential forces. Whatever of tides or currents there are in the ocean; whatever flowing streams or gushing fountains there are on the dry land; whatever rain, or wind, or moisture there may be in the atmosphere; whatever of beauty in form or color there is in the vegetable kingdom; whatever of activity or happiness there is found among animated beings—all, *all* result from the manifold and benign influences of this glorious luminary. What the action of the heart is to the body, that the action of the

sun is to the earth; it is the motive power of all its varied activities. The water and the air, the vegetable productions, and the animated beings of the whole earth, have been constituted with specific reference to the light and heat and actinism of the sun; and the sun has been made the depository and dispenser of such light and heat as are specifically adapted to produce the motions, to supply the stimuli, and to afford the conveniences, which all these require. In view then of such a concourse of essential relations, and striking adaptations, we cannot resist the conclusion, that He who made the earth made the sun also.

Being thus related to the sun, we find ourselves related likewise to a family of a hundred other worlds—planets, planetoids and satellites—that revolve with us around him as a common centre. What the sun is to our world, he is to each of these. All are governed by the same gravitating power, all are illumined by the same light, all pursue the same rounds, all exhibit the same forms, all enjoy similar changes of seasons and of day and night, while all constitute together one complete and harmonious system.

That the members of this great family of worlds are of one origin, are the works of one and the same omnipotent Being, we have various evidences of a still more direct nature. The solar system is a complete whole; all its parts are related, and mutually influence one another; and so nicely are their respective attractions balanced, that not a member could be struck out, or removed, without destroying the equilibrium and endan-

gering the safety of all. Again: under the telescope the moon exhibits a surface diversified like that of the earth, with plains and hills and valleys; it abounds, moreover, with the craters of volcanoes, having forms that are well illustrated by some of the earth's volcanoes, although of immense size. The principles exemplified on the earth are but repeated in the moon. The telescope reveals on the surfaces of the planets also clear indications of arrangements strikingly analogous to those on our own globe—such as land and water, mountain ridges, agitated atmospheres, floating clouds, summer heat, and winter snows. (See the accompanying Map of the Planet Mars.) And that instrument of recent invention but marvellous powers, the spectroscope, has proved that many of the very materials composing our globe are found also in the composition of the sun. *Hydrogen* abounds in it, and *sodium* has been discovered there; besides these, the sun's atmosphere contains the vapors of *calcium*, *magnesium*, and *chromium*; *iron*, *copper*, *zinc*, and other metals appear also to exist in the sun. Here, then, we have, not similarity only, between the earth and the sun, but, in a great measure, kindred and identity of composition. And the same obviously holds equally true of all the other planets and the sun. Add to all the above the interesting fact, that we have sent down to us from the heavens *specimens* of these celestial bodies in the meteoric stones that have frequently fallen to the earth. It is now regarded as proven that these proceed from the inter-planetary spaces. Now these meteoric bodies, which have been found of all sizes, from



MAP OF THE PLANET MARS.

a few ounces to many tons in weight, exhibit the operation of precisely the same chemical and crystallographic laws as the rocks of the earth; and in them has been discovered no new element, no new principle of any kind. Now, all the foregoing facts and considerations constitute a complete demonstration, that the sun, the earth, and all the other planets are the contrivance of one Mind, the work of one Hand, and under the dominion of one wise and almighty Being. We can discover nothing on the earth below, or in the heavens above, that lends the shadow of countenance to the idea, that these great orbs are under the rule of different deities; nothing, indeed, that indicates the existence of such fabulous beings.

The solar system, numerous and diversified as are the globes composing it, is but a member of a system still higher—a Sidereal System. As the planet Jupiter carries along with it its four revolving moons in its circuit round the sun, so the sun itself, with all its vast and magnificent retinue of planets and satellites, has been discovered to advance and revolve around a fixed centre, situated at an immeasurable distance in the depths of space. This centre is said to be the beautiful star named Alcyone, one of the Pleiades. Other suns (for such the fixed stars are believed to be), carrying with them equally large and splendid retinues of worlds, have been observed to revolve in a similar manner, along orbits of incalculable dimensions. In short, all the stars of heaven, countless as they may be, there are reasons to believe, are in like manner in incessant revolution through the trackless voids of immensity. Thus globe

is linked to g'o'e, and system chained to system, while the whole amazing universe is fast bound to the invisible and eternal Throne of JEHOVAH.

We have now reached a point in our argument, where we are prepared to contemplate yet higher and more general evidences of the unity of the whole vast creation, both as to its origin and its government. There are found in the universe certain laws and forces, which are observed to prevail, and to be in uniform operation, throughout all worlds, and all systems of worlds, to the utmost limit of telescopic power; which laws and forces may be regarded as the common bonds of the whole material creation. Of these we notice,

First, *Gravitation*, or that property of matter by which particle is attracted by particle, and mass by mass. In all material things this force is ever present and ever active. It is by its all-pervading influence that the glittering dew-drop is held together a crystal sphere upon the bending blade—that the apple loosened from the tree descends to the ground—that the river flows and leaps to form the grandeur of the cataract—that the moon is retained in her orbit round the earth, and the earth in its course round the sun. And throughout nature it operates undeviatingly according to the same law, so that the astronomer by means of it can poise the mass of one planet against that of another, and tell with absolute exactness and certainty their comparative weights. Throughout the universe the balance of gravitating force is unerringly sustained. If the smallest asteroid in the system, or the minutest twinkling star in the vault of

heaven, were blotted out of existence, or even removed out of its proper place, the balance of gravitation would be disturbed, and the event felt through all the created systems of worlds. A slight *trembling*, produced by an unknown influence, in the motion of the planet Uranus, actually offered sufficient data to calculate both the position and the magnitude of the disturbing cause; and upon directing the telescope to that point in the heavens indicated by the Calculator in his study, behold the cause in the lonely Neptune, a planet lying more than a thousand millions of miles beyond, and never beheld by mortal eye before! So firmly, yet so evenly and delicately lies all nature in the embrace of this infinite power, that it is no exaggeration to say, that the blow that sounds forth the midnight hour upon the city Bell, is conveyed by successive impulses to every one of the myriad orbs of heaven. From the imperceptibly small to the immensely large—from the centre of creation to its utmost bounds—gravitation exerts its force. It pervades and embraces and holds together the whole material universe.

“The smallest dust which floats upon the wind
Bears *this* strong impress of the Eternal Mind.
In mystery round it, subtle forces roll;
And gravitation binds and guides the whole.
In every sand before the tempest hurl’d
Lie locked the powers which regulate a world,
And from each atom human thought may rise
With might to pierce the mysteries of the skies—
To try each force which rules the mighty plan,
Of moving planets, or of breathing man;
And from the secret wonders of each sod,
Evoke the truths, and learn the power of God.”

A second general bond of the universe is found in the all-pervading *Ether*. The existence of such a medium was long suspected; and now has been established to the satisfaction of scientific men generally. This ether is supposed to be an elastic medium of extreme tenuity, pervading all space, not even excepting what is occupied by material bodies,* and extending to the remotest limits of the universe. All substances, all planets, all systems, are enveloped in it, and suffused with it. Now, according to the prevailing theory of the day, *light* consists in a vibratory movement excited and propagated through this ether by the sun, the stars, or other luminous bodies. It therefore resembles sound, which is produced by undulations in the air. In neither case is there a transfer of substance, or travelling entity, but simply a propagated motion, analogous to the waves generated by the wind across a field of wheat, in which there is no actual movement of the growing stems from their places, but only the advancing forms of waves. The vibrations in the luminiferous ether, by which light is produced, are supposed to be somewhat similar to these; or, what is a better illustration still, to the vibrations propagated along a stretched chord. In this ether, therefore, we have, not simply a bond of connection, but a most marvellous medium of communication between all worlds, and all systems of worlds. On its swift-winged vibrations, consignments of light and heat are perpetually despatched from the sun to all his encircling

* Herschel's *Scien. Lects.*, No. VII.

planets and satellites, and from these again into surrounding space. Through its ethereal pulsations, every visible star in the heavens reveals its existence, and accurately announces its every change of position or of brightness, to every other visible star. By its mysterious agency messages of light perpetually come and go between the innumerable orbs of heaven, traversing the voids of immensity in all conceivable, in all possible directions. Thus all regions, all provinces, all parts of the universe are in perpetual and infallible communication.

These ether messages are not transmitted instantaneously, but occupy time according to distance. Light travels at the rate of 186,000 miles per second. Hence the light of the sun, or what is the same thing, the sun's picture, with all his dark spots and bright faculæ, comes to us in eight and a quarter minutes; the picture of Jupiter arrayed in his shifting belts, when at his mean distance, in three quarters of an hour; and that of Neptune, the remotest of the planets, in four hours. From the nearest fixed star, α Centauri, the passage of light occupies full three years; from 61 Cygni, ten years; from Sirius, the brightest of all the stars, twenty years; from the Pole Star, forty-six years; from the serene Capella, seventy-two years; from the Pleiades, seven hundred years; from others as many thousands, and from others still probably as many millions of years. Hence when we direct our telescope to these stars, we see them, not as they are at the present moment, but as they were so many years or so many centuries ago.

From the foregoing facts it appears, then, that from every star, every planet, every satellite, there flows out in all directions a distinct and perfect picture of whatever scene or aspect its surface presents at every passing hour, every passing moment; and this picture continues its outward flight forever into the depths of infinite space. The mariner takes observation of the star of the Pole, and his eye receives a picture of it that left its disc nearly fifty years since. The astronomer peers at Alcyone, and receives an image that took its flight from that orb full seven centuries ago. The same holds true, of course, of the planet upon which we dwell. To the inhabitants of those stars (supposing such inhabitants to exist, and to be endowed with the requisite power of vision), whose distance from the earth requires two hundred and fifty years for the flight of light, the scene of the Pilgrims' Landing is just now becoming visible. To the dwellers of worlds at seven and a half times that distance, the sad and tragic deed of the crucifixion on Calvary is a present scene transpiring in all its reality as under their eyes. The occupants of still remoter spheres, that are at the proper distance, are now gazing upon the fountains of the great deep breaking up, and the windows of heaven opening, to sweep away the incorrigible antediluvians. Thus at some point or other, in the boundless expanse, every visible event in the history of our globe, and of all other globes, may be seen at any particular moment. And as the Infinite God is present at all such points, every deed and every event that has ever transpired must be still present before his view. This luminiferous ether, therefore, may

be regarded as an illimitable *Volume*, receiving and preserving on its mystic pages the full record of the universe.

A third general bond we have in *Magnetism*. The sun not only sways the whole planetary system by his gravitating force, and cheers and animates it by his light and heat, but pours forth also a subtle yet powerful magnetic influence upon its every member. Careful and prolonged observation of the vibrations of the Needle has demonstrated a uniform coincidence, both in time and in intensity, between the changes that take place on the sun's surface, and the changes observed in the magnetism of the earth. When the spots on the sun's disc are most numerous, then the vibration of the magnet is most extensive; and when his face is least obscured by these spots, then the Needle vibrates over the least arc. Unusual agitations upon the solar surface produce what are called "magnetic storms" on our globe. Some of these storms have been very notable. In the year 1859, two immense bright spots, resembling vast luminous clouds, suddenly burst into view on the sun's surface; instantly upon this, magnetic instruments were everywhere thrown into extraordinary agitation; "telegraphic communication was interrupted; and, in some cases, telegraphic offices were set on fire; auroras appeared both in the northern and southern hemispheres during the night that followed; and the whole frame of the earth seemed to thrill responsively to the disturbance which had affected the great central luminary of the solar system."*

* *Other Worlds than Ours*, p. 32.

If our planet be thus affected by the sun's magnetic influence, then all the other planets also. Mercury and Venus much more, as they are much nearer. But beyond our earth, and beyond the orbit of ruddy Mars, the magnetic impulses speed with the velocity of light. The vast sphere of Jupiter and its four dancing moons are thrilled in every part, as the magnetic wave rolls in upon them; then Saturn feels the shock, then Uranus, then Neptune; and still onward in lessening force, but ever-widening circles, sweeps the mystic power—and who shall tell where it ends!—In this magnetic influence of the sun, exerted with every passing instant, we see another important bond of union between the orbs composing the mighty universe, and another proof that they are the product of one creative Mind.

From all that has now been stated, it plainly appears, that the same general forces which operate, and the same general laws which rule on the earth, prevail also in the heavens. So far as human science has been able to investigate, there is a unity in the composition, the construction and the government of the whole universe. *Globes of matter* are strewn throughout immensity. *Motion* is everywhere observable; nothing is at absolute rest. *Gravitation* is omnipresent, and exerts its power alike upon the little and the great, the near and the remote; by the same law it moulds the tear and rounds the planet; by the same force it brings the one to the ground and carries the other on in its orbit. *Light*, too, manifests its presence everywhere; and whether it comes from the sun, from the moon, or from the most distant

star, it is governed by the same laws, and transmitted through the same medium. *Heat*, and *Electricity*, and *Magnetism*, also, are present, and do their wondrous duties alike throughout all material existences. "Hence the philosopher," says Humboldt, "arrives at last at an intimate persuasion of one indissoluble chain of affinities binding together all nature."

St. Paul says of the human frame, "If one member suffer, all the members suffer with it; and if one member be honored, all the members rejoice with it." This, in a certain sense, is equally true of the frame of Nature; all its parts, likewise, are in sympathy; not a change, not a movement can be made but it is felt throughout. I strike a blow with a hammer, or cast a stone from my hand, and in so doing I create a current in the air; that current slightly varies the temperature in the space around; this may lead to chemical changes, and these again may excite electric and magnetic currents, that shall take the circuit of the earth, and even of the universe, without being lost. All creation is a unit. And "this unity of Nature is the reflection of the unity of that Supreme Reason and Intelligence, which pervades and rules over Nature, and from whence all reason and all science are derived."* Thus the unity of the visible creation carries us up to the unity of the Divine Nature, of which it is both a proof and an illustration.

Creation, one in its origin, and one in its government! This sublime conclusion, reached by human science after

* Baden Powell's *Unity of the Sciences*, Essay I

so many ages of observation, research and study, is but the doctrine taught by Jesus of Nazareth eighteen centuries ago. *One God, One Creator and Ruler of all*, was the truth he proclaimed in the synagogue and in the temple, by the sea-shore and on the mountain's side. And the commission with which he sent forth his disciples was to go into all the world and call men from dumb and senseless idols to worship and serve this true and living God, who made heaven and earth, and who giveth to all life and breath and all things.

When *all nations*, civilized as well as savage; and *all classes*, from the legislator and the sage down to the menial and the slave, were wholly given to the worship of a pantheon of monstrous and corrupting divinities, Jesus Christ, wise above all his predecessors, and far in advance of all his contemporaries, announced and portrayed God in a character worthy the LORD of the universe. Unlike the local deities recorded in classic mythology, or those dressed and described by Greek and Latin poets, or those adored by Egyptian priests or Persian magi, fabulous in their nature and origin, and incongruous, corrupt and contemptible in their character, the GREAT TEACHER revealed a God worthy the eternal admiration, confidence and love of all rational creatures—a God wise, holy, just, pure, and merciful; in whom the intellect, the affections and the conscience of man may calmly and safely repose.

The character of the Great Creator as given by Jesus Christ is a *perfect character*. Since the time of his sojourn upon earth, mankind have made great advances

in knowledge and civilization, in arts and sciences; but the increased light, while it has exhibited both the deities and the religions of the heathen of his day, as being wicked, absurd and abominable, has served only to prove the character of the God of the New Testament to be immaculate and faultless. Here we have all that can enter the mind in the conception of God—a Being uncreated, infinite, all-wise, and almighty; the Maker and Ruler of all things; true and just and pure in all his ways; loving righteousness and hating iniquity. Nothing in all the compass of modern light and progress; no principle established by the Moralist, no conclusion reached by the Metaphysician, no discovery made by the microscope of the Naturalist, or by the crucible of the Chemist, or by the telescope of the Astronomer—demands the change of a term, or the modification of a feature, in the Divine Character, as given by Christ and his apostles. It is a perfect character; it neither requires nor admits of any emendation. It is verily the Supreme Being, Lord of heaven and earth, that is set before us in the Gospel. And we are filled with awe and reverence in his presence. We instinctively bow down before the measureless heights, the unfathomable depths, the illimitable possessions, of this Uncreated Intelligence. We feel that worship is not simply becoming, but a bounden and sacred duty, a necessary tribute, which we cannot reasonably withhold from such a Being. We are prompted, we are constrained to join in the angelic chorus, "Thou art worthy, O Lord, to receive glory, and honor, and power; for Thou hast

created all things, and for thy pleasure they are and were created."

How different the view presented by Christ of the nature and character of God from that given by Grecian philosophers, or Jewish Rabbins, or Oriental Gymnosophists. He describes Him as a Being of a purely spiritual nature, which no material images can represent; and, raising Him to an infinite height above all that man ever conceived, declares that He stands alone in absolute and unapproachable perfection. He presents Him as reigning sole over all the universe of matter and of mind. Drawing aside the veil which hid His glory from human view, he reveals Him in his high and holy place, not in a state of silence and solitude, but surrounded by ten thousand times ten thousand holy and happy beings, ever waiting and delighted to do his bidding; not in a state of listless repose, but in active communication with every part of his vast dominions; not in a state of apathy, regardless of the world and all its concerns, but as presiding over it with a Father's loving care—observing the actions, listening to the cries, and providing for the wants of every living thing; yea, even shows Him to us in the astonishing act of raising up the fallen and prostrate children of men, and putting them in the way of reaching his own blessed abode.

"From whence, then, had this Man these things?"—this plain and poor Man of Galilee, who never listened to the discourses of philosophers, never sat at the feet of a Rabbi? Whence had he this knowledge, this surpassing knowledge, which enabled him to deliver instruc-

tions that should survive all the progress, inventions, and discoveries of future generations? Whence had he this superior wisdom which empowered him to rise immeasurably above all other teachers, and to harmonize all his instructions with the facts of the universe, as understood in these last days, and proved by the most recent and reliable deductions of science? Whence, we ask, this knowledge, this wisdom to Jesus of Nazareth, which enabled him thus to announce truths that should be found in advance of the science of all successive ages? But one answer, true and reasonable, can be returned—that returned by himself,—“I AM FROM ABOVE, AND AM COME TO BE THE LIGHT OF THE WORLD.”

Yes; the truth Christ delivered to men flowed from the fountain of his own mind, as from its native home. His was the wisdom of God. He had all the knowledge, science and philosophy of the universe at his command. The key of all mysteries hung at his girdle. And had he seen fit, he could have forestalled all the boasted discoveries of our day, and have opened the gate to the tree of knowledge for man, and permitted him to feast on its golden fruit, without the toil of study, experiment, or investigation. “In Him were hid all the treasures of wisdom and knowledge.” “Never man spake like this man:” “HEAR YE HIM.”



THE LAWS OF NATURE

AND THE

DOCTRINES OF PROVIDENCE AND PRAYER.

You may interrogate the human race, in all times and in all places, in all states of society and in all grades of civilisation, and you will find them everywhere, and always, believing in facts and causes beyond this sensible world called Nature.—GUIZOT.

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- I.—THE TRUE IMPORT OF THE PHRASE, "LAWS OF NATURE:" THE THREE
DIFFERENT SENSES IN WHICH IT IS USED.
- II. THE RELATION OF PHYSICAL LAWS TO PROVIDENCE.
- III. THE BEARING OF PHYSICAL LAWS ON ANSWER TO PRAYER: PRAYER
FOR SUSTENANCE, FOR PROTECTION, AND FOR THE SICK.



THE LAWS OF NATURE

AND THE

DOCTRINES OF PROVIDENCE AND PRAYER.



IN the New Testament Scriptures, God is represented as being not only present in every region and province of his vast dominions, but in active communication with everything that lives, or moves, or exists—working in all and through all after the counsel of his own will. He is revealed to us as ruling universally and unremittingly over the world of mind and the world of matter, being interested in every creature, ordering every vicissitude, concerned in every event. Is the earth illumined by the sun, or watered by the clouds? *It is HE who maketh that sun to rise on the evil and on the good ; and sendeth His rain on the just and on the unjust.* Are the hills clothed with verdure, and the valleys adorned with flowers? *It is GOD that maketh the grass to grow, and arrays every lily of the field as was not Solomon in all his glory.* Does a kernel of wheat, or some other grain, sink into the furrow and

decay in the soil to spring forth again and reproduce its kind? *It is GOD that quickeneth, and giveth to every seed his own body.* Is the labor of the husbandman rewarded by the harvest of the field and the fruit of the vineyard? *It is HE that giveth us fruitful seasons, filling our hearts with food and gladness.* Are we startled with the sudden crash, or dazzled with the fierce glare of the fiery bolts that leap among the clouds? *It is the LORD that thundereth with the voice of his excellency, and directeth the lightnings under the whole heaven.* Does the little bird rise to sing among the branches, or does it flutter and fall and perish? By God's help it soars, and only with his consent it is brought low: *Are not two sparrows sold for a farthing? yet one of them shall not fall to the ground without your FATHER.* Is the earth divided among the children of men? Are its continents and islands peopled by races differing in their forms and complexions and capacities? *It is GOD that hath made of one blood all nations of men for to dwell on all the face of the earth, and that hath determined the times before appointed, and the bounds of their habitations.*—Thus this sacred Book ascribes all that takes place in the firmament and on the earth, in the history of man and in the varied lots of living things, directly and explicitly and emphatically to God. Nowhere does the Great Teacher, or do those whom He inspired, stop at second or instrumental causes. Nowhere do they devolve on the tool the honor which belongs to him who handles it. In the New Testament, throughout, God is the only efficient cause of all that takes place under the whole heaven. He is declared

to be the original fountain of all force, of all life, and of all intelligence. *Of Him, and through Him, and for Him are all things.*

Very different from all this are the sentiments not infrequently put forth in the present day. Among the votaries of Natural Science we discover a class that manifest a constant disposition to remove God from all connection with His works, and to deny Him any participation in the government of the world His hands have made. By these, the association of God's agency with any of the operations of nature, if not openly denied, is studiously avoided. This is notably the case throughout the *Cosmos* of the distinguished Humboldt. Others of this class, like Herbert Spencer, choose, or seem to choose, to ignore the Divine Being under such vague phrases as *the unknown*, and *the unknowable*. Natural phenomena, of whatever kind, these tell us, are to be ascribed to physical laws, or the properties of matter. Having reached these, we are to push our inquiries no further, we are to look no further; all beyond is "the unknown." And any attempt to go behind these laws and properties is regarded as an evidence of humble intellect, defective education, or religious superstition. All things, we are perpetually reminded, are under "the reign of Law." Hence, if we inquire after the origin of this arrangement; or the agent in that combination, or the cause of yonder revolution, we are promptly met with the decisive answer that the one is due to the laws of magnetism, the other to the laws of chemical affinity, and the third to the laws of gravitation. With this we

are required to be satisfied; here we are bidden to stop. "It is useless to inquire after any cause beyond these," we are told; "all we can ever attain to is the observation and registry of constant laws of phenomenal sequence; phenomenon succeeds to phenomenon, event to event, according to certain rules, which are all we have any business to inquire into." Thus Natural Laws have come to cast out Nature's Creator, and the Properties of Matter to assume all the functions of His divine attributes.

The light in which this class of men would have us view the operations and productions of nature, and the whole government of the world, therefore, is widely different from that in which the Divine Teacher instructs us to regard them. This difference, which must be to every devout mind a most serious and important one, we propose to discuss in the present chapter. And in order to a clear understanding of the subject, it will be necessary, first, to inquire in what sense the term Law, or Laws, can be properly applied to material things; and then to consider the more immediate bearing of these Laws on the matter of Religion—particularly Providence and Prayer.

I. LAWS OF NATURE—THEIR TRUE IMPORT.

THE study and application of physical science constitute the distinguishing characteristic of the present age. We cannot read a periodical or enter a lecture-room without meeting with some reference to it. Yet while

we thus perpetually hear and read of physical laws—the laws of nature, the laws of matter—nothing can be more inaccurate than the conceptions of many concerning these laws; nothing more vague or meaningless than the language they employ in speaking of them. For the want of a clear perception of the special and limited sense in which Law can be predicated of the phenomena of the world, ideas essentially distinct are often confounded under common terms.

The Laws of Nature are often represented and referred to as if they were *agents*, or *efficient causes*. To see the absurdity of this, we need but consider what Law implies. Law, in the proper and primary sense of the word, is *the expression of the will of Intelligence to beings that have the capacity to understand and the power to obey it*. A law, in this the proper sense of the term, therefore, cannot be addressed to nature, or lifeless and unconscious matter; for matter is wholly incapable of it. Matter cannot hear laws, matter cannot understand laws, matter cannot obey laws; it can no more move and form itself into a blade of grass, or a grain of mustard seed, than a dead man can write a book or build a house. And not only this—a law is simply a *rule*, and not an agent, or a cause, or an instrument. A law is not a doer, but a mode of doing. A law, whether human or divine, *does* nothing; but simply prescribes how this or that shall be done. To say, therefore, that this is done, or that is effected by a law of nature, is to use words without meaning.

Again: we are frequently told that matter operates

thus and so in virtue of a law *impressed upon it*. But what are we to understand by this? What truth or meaning can we extract from such an expression? None whatever. The idea of the Almighty impressing laws upon material substances at their creation, under which they of themselves must forever continue to act, is a pure fancy, imposing upon us by sounds, which, on examination, are found to have no significance. If by these "impressed laws," we are to understand the announced will or purpose of God (for what else can be intended?) then we say that neither the atmosphere, nor the ocean, nor the solid substance of the globe, is capable of understanding the announcement, or of retaining the knowledge of it. They cannot receive the command, and they cannot obey it. The volition or purpose of the Divine Mind cannot be contained within them, and cannot be imparted to them. This can be true of a person only—of unconscious matter never. Besides, a law, impressed or unimpressed, being, as before stated, simply a Rule, and not an agent, can of itself exert no force, effect no change, produce no result.

From the foregoing erroneous ideas respecting the laws of nature, the world in which we live has come to be regarded by some as a *self-acting machine*. The conception of those who entertain this theory is, that at some very remote period, which cannot now be defined, God by an act of omnipotence called into being the elementary materials of the earth, and of the universe; that He in that hour impressed all the various substances created with their respective self-acting properties and laws—

that He then withdrew His agency, leaving them to pursue their fixed and inevitable course of self-development into a well-ordered world, that in time should abound with displays of order, objects of beauty, and scenes of grandeur; and finally, with all the forms and activities of happy life—and that He has continued ever since a mere spectator of the works of His hands. “There is no more need of His power,” it is said, “for all things in the universe are so constituted, so governed by law, so fitted into one another, that by mutual action and reaction the whole machinery of the world is kept in unceasing motion, self-guided, self-adjusted, self-energized.”* This, assuredly, is to make creation an *independent* existence. After the primary act, according to this view, the Creator might have ceased to be, as far as the created universe is concerned; for it could proceed to all eternity without Him. But then, He is allowed the credit, and, what is called “the greater honor,” of having contrived a machine, a universe of clock-work, that ever winds itself up as fast as it runs down, and so keeps in perpetual and self-sustained motion. Thus the MOST HIGH is courteously deposed, and complimentally dismissed from His own dominions. Since the hour of creation He has had no connection with His works; His personal agency has never been put forth among them. He has remained in complete inactivity; His wisdom, power and goodness have lain dormant. He simply exists—a mere spiritual passivity—a philosophical abstraction! In this manner

* Warrington's *Week of Creation*, p. 91.

this class of "our men of science," instead of leading us forward to more exalted and worthy views of the Divine character, carry us back to the religion of the Brahmin, which teaches that "God is a spirit existing in a state of eternal repose." Surely herein we have "Atheism with a God"!*

What then are the Laws of Nature, correctly expressed, and rightly understood? The term Law is used in the Natural Sciences in three senses, which are to be carefully distinguished.

FIRST. *Law* is employed to denote a *uniform order of facts*; such as that all birds are oviparous; that the right and left sides of all vertebrate animals correspond in their members and organs; that all the leaves on any particular tree are formed after the same pattern; that the offspring is of the same species as the parent; etc. Such an order of facts as either of these is called a General Law. Now, when the term is used in this sense, we cannot speak of the *action* of Law, or that it produces any result; for it does not include the idea of force, or causality; but simply expresses an established order of facts. Yet "the mere ticketing and orderly assortment of such facts," under the name of Law, "is constantly spoken of as if it were in the nature of *expla-nation*, and as if no higher truth in respect to such natural phenomena were to be attained or desired."† Whereas, in such cases, the facts give the Law, and not

* DEUS sine dominio, providentia, et causis finalibus, nihil aliud est quam Fatum et Natura. Newton's *Principia*, Schol. in fine.

† Argyll's *Reign of Law*, p. 3.

the Law the facts. Law, therefore, in this sense effects nothing, accounts for nothing, explains nothing, but is a mere statement of what the condition of nature is.

SECOND. The term *Law* is used in natural science to denote *the Properties of Matter*. There are in nature some sixty* simple or elementary substances; and all things on the earth are a combination of more or less of these, as all the words in our language are a combination of a greater or less number of the letters of the alphabet. These substances are so constituted as to affect or influence one another variously. The power which one substance has of changing another, or its susceptibility of being changed by another, is called a property of that substance; and all substances have their definite and fixed properties. Gravitation is such a property of matter; all matter attracts all other matter with a force that is in proportion "directly as the mass, and inversely as the square of the distance;" and this is called the Law of Gravitation. The exact numerical proportions, in which the several gases combine, are properties of these gases, and are called the Laws of Affinity. Light, heat, electricity and magnetism have their respective properties, working according to precise and uniform rules, and which are termed the

* The number of what have been regarded as elementary substances has varied with the progress of science; at present they are put down at sixty-three. Of these oxygen alone forms one-half the mass of the whole globe; silicon, one-fourth; aluminum, magnesium, calcium, potassium, sodium, iron, carbon, sulphur, hydrogen, and nitrogen make up nearly the other one-fourth; the remaining fifty-two elements do not constitute altogether more than one-hundredth part of the globe.

Laws of these elements. Now, this class of laws, like the former, cannot be said to effect anything, or to account for anything. Law in this sense is simply a generalized statement of the forces or susceptibilities which belong to different substances.

All the properties of any given substance have a reference or adaptation to those of some other substance or substances, otherwise no change could be effected or sustained. In other words, there is a certain constitutional relation between the properties of different substances whereby they are capable of affecting others, or are susceptible of being affected by them. Without this no change or combination can take place. Oil and water, for example, will not mix, for the relation of mutual affinity does not exist between them; but between spirits and water this is found, and they will readily combine. All action or change originates in the combined operation of two or more material substances, and implies a relation between their properties so as to admit of their mutual action. And this brings us to

A THIRD sense, in which Law is used, namely, To denote *the action of two or more substances*, so related and adjusted as to produce effect. This is the most common and also the most important sense in which Law is used in natural science.

Each elementary substance, as already stated, has its own properties, its own combining proportions, to which it is bound with mathematical precision; so that except in these proportions no chemical union can take place at all. The proportions, by *weight*, in which the gases combine are as follows:

| | | | | | | |
|---------------|-----|-----|-----|-----|-----|------|
| Hydrogen..... | 1, | 2, | 3, | 4, | 5, | etc. |
| Carbon..... | 6, | 12, | 18, | 24, | 30, | etc. |
| Oxygen..... | 8, | 16, | 24, | 32, | 40, | etc. |
| Nitrogen..... | 14, | 28, | 42, | 56, | 70, | etc. |

That is, 1 ounce of hydrogen will combine with 6 ounces of carbon, or with 8 of oxygen, or with 14 of nitrogen. Or again, 6 ounces of carbon will combine with 8 of oxygen, or with 14 of nitrogen. Or, 8 of oxygen will combine with 14 of nitrogen. And so of the other figures. Nothing can be more perfect than the manner in which this order of combination is regulated. For illustration: to form *water* it is necessary to have 1 part of hydrogen and 8 parts of oxygen; and if there be a different proportion, say 1 part of hydrogen and 10 parts of oxygen, then there will be only 8 parts of the oxygen absorbed in joining one part of hydrogen to make water, and 2 parts will remain free and unchanged.

Again: oxygen will unite with 14 parts of nitrogen, by *weight*, in the following proportions, and yield the following results:

| NITROGEN. | | OXYGEN. | | PRODUCTS. |
|-----------|---|---------|---|------------------------|
| 14 | + | 8 | = | Protoxide of nitrogen. |
| 14 | + | 16 | = | Deutoxide of nitrogen. |
| 14 | + | 24 | = | Hyponitrous acid. |
| 14 | + | 32 | = | Nitrous acid. |
| 14 | + | 40 | = | Nitric acid. |

Equally simple and uniform is the law of combination by *volume*. Take for example the five compounds of oxygen and nitrogen as above:

| OXYGEN. | | NITROGEN. | | PRODUCTS. |
|---------|---|-----------|---|------------------------|
| 2 | + | 1 | = | Protoxide of nitrogen. |
| 2 | + | 2 | = | Deutoxide of nitrogen. |
| 2 | + | 3 | = | Hyponitrous acid. |
| 2 | + | 4 | = | Nitrous acid. |
| 2 | + | 5 | = | Nitric acid. |

Again: it is a general Law that when compound bodies combine in more than one proportion, that every additional union represents a *multiple* of the combining proportion of the first. This will be illustrated by the following Table :

| | | | | | | | | |
|----------------------|---|---|---------|---|-----|---------|---|-----|
| Water..... | = | 8 | p. oxy. | + | 1 | p. hyd. | = | 9 |
| Nitrous oxide..... | = | 8 | " | + | 14 | nit. | = | 22 |
| Oxide of chlorine... | = | 8 | " | + | 36 | chlor. | = | 44 |
| Potash..... | = | 8 | " | + | 40 | potas. | = | 48 |
| Oxide of platinum.. | = | 8 | " | + | 96 | plat. | = | 104 |
| Oxide of silver..... | = | 8 | " | + | 110 | silv. | = | 118 |
| Oxide of mercury.. | = | 8 | " | + | 200 | mer. | = | 208 |

In *these* proportions, or in *multiples* of them, and in no others, will these bodies unite with the acids or other compounds.

Once more: the composition of bodies is fixed and invariable; that is, they consist of the same elements united in the same proportions, wherever found or however produced. For example, *Chalk*, whether formed by nature, or by the chemist, is composed of 43·71 parts of carbonic acid, and 56·29 parts of lime. Again: the *Rust of Iron*, by the action of the atmosphere, is as invariable in its composition, as if it had been formed by the most delicate adjustment of weight, by the most accurate chemist, being 28 parts of iron, and 12 parts of oxygen. Again, take *Salt*; if we mix 23 ounces of sodium and 35·5 ounces of chlorine, they will exactly unite; the whole of both elements will disappear, and become merged in the compound, which is our common salt. But if we bring together 24 ounces of sodium, and 35·5 ounces of chlorine, the extra ounce of sodium will be left aside, while the rest will unite as before. Thus

the composition of material bodies is fixed and invariable. Numerical exactitude lies at the root of all things in nature, so that it is literally a scientific truth that "the mountains have been weighed in scales, and the hills in a balance."

Such are a few samples of the exact and beautiful Laws of combination which exist between the elementary substances which compose our globe and all its furniture. According to these Laws all the combinations which we discover in nature take place. All the substances composing the mineral kingdom; all the various productions of the vegetable world—their woody fibres and diverse juices—their flowers, fruits and seeds—the acids, the gums, the resins, and the sugar which plants produce; and those yet more complicated animal substances—bone, muscle, blood and bile—albumen, caseine, milk; are all produced in strict accordance with these Laws.

And now to come back to the question under discussion—Can Law in this third sense, as above illustrated, be said to produce or effect any result? Can we, in any proper or intelligible sense of the term, ascribe to it any of the phenomena of nature as their producing cause? We answer, No. In all these and similar combinations an *action*, indeed, takes place—a union is formed between different elements, often giving birth to a body altogether dissimilar from them all. But the Law does not give us these combinations, but the combinations give the Law; and apart from the combinations, the Law has no existence. Instead of the Law producing these phenomena, it may be more truly said that the phenomena produce

the Law; just as a sum in arithmetic gives the answer rather than the answer the sum. It cannot, therefore, in any correct or truthful sense of language, be said that these Laws *do* anything, or account for anything.

What, then, is the force, the mysterious impulse by which atoms and molecules are moved and guided so unerringly in their combinations? Science calls it *elective affinity*. But what is affinity? A name, which, in our ignorance, we are compelled to give to an *unknown power*—a power that eludes and defies all our attempts to investigate it. “We habitually speak of the attraction and repulsion, of the affinity and non-affinity of bodies,” says Robert Hunt, “and write learnedly upon the laws of these forces. After all it would be more honest to admit, that we know no more of the secret impulses which regulate the combinations of matter, than did those in days gone by who satisfied themselves by referring all phenomena of these kinds to *sympathies* and *antipathies*.”*

“Affinity and gravitation are both primary laws, and for these as for every other physical law, no cause can be assigned, except the Divine Will.”† The laws of affinity, or the rules according to which elementary substances combine—their proportions, their arithmetical series, their undeviating multiples—do most clearly and forcibly point to an intelligence behind them, by which they have been arranged and established, and to a power over them, by which they are thus ever maintained. The

* *Poetry of Science*, p. 218.

† Murray's *Habit and Intelligence*, Vol. I. p. 43.

eye no sooner falls upon the very figures, expressing such remarkable relations and quantities, than the conviction flashes irresistibly through the mind, that they must be the arrangements of wisdom, and that the results which fall out infallibly according to these figures must be the effects of a presiding and efficient Will. Indeed we feel that to deny that Mind must be concerned in them, that they express will and intelligence, we must deny our own reason and consciousness. Thus Natural Laws, when rightly understood, conduct us directly to a Being beyond and above nature—its Author, its God. Even the author of *The Vestiges of Creation* is forced to this acknowledgment—"The laws of nature is but another phrase for the *action* of the ever-present and sustaining God." *

"All our science," says Dr. Carpenter, "is but an investigation of the mode in which the Creator acts; its highest laws are but expressions of the mode in which He manifests his agency to us. He is the efficient cause alike for the simplest and most minute, and of the most complicated and most majestic phenomena of the universe." †

This great truth will be further evident from a consideration of a more fundamental nature. The various material substances, which compose the earth, have not only been created by God, but are every moment dependent upon his power for their continuance in being. As material things did not come into existence of them-

* *Vestiges*, p. 10, tenth edition.

† *General and Comparative Physiology*, p. 1080.

selves, so neither can they continue in existence of their own power. No thing, no being, save God, can be self-existent for an instant. The Almighty—we speak with reverence—could not have created such a thing or being. He could not have communicated the attribute of self-existence; this, like his omniscience and omnipotence, belongs exclusively to his own eternal and mysterious Being. His attributes are a unitive perfection, and incommunicable. Hence, it is certain, that the ground of the existence of every element, and every atom of matter, is not in itself, but wholly and only in the will and sustaining power of the Creator. Matter continues in being because He wills that it shall continue. Underneath it, and in it, sustaining it, entirely causing it, are the Almighty will and power. Let these be withdrawn for a second, let there be no present divine volition, no present emanation of divine power, and that moment it is nothing; that moment it sinks into annihilation, or vanishes as doth a man's image from a mirror, when he withdraws from before it, for the sole ground of its being is gone.* “He upholdeth all things by the word of His power; and by Him all things consist.” His active omnipotence each moment floods all nature. The whole order of the universe is simply the effect of His infinite power and wisdom.

It is gratifying to every devout mind to observe that the most recent advances of natural science have been steadily converging toward this scriptural view. We

* See Dr. J. Young's *Creator and Creation*, Chap. II.

refer more particularly to what is called "The doctrine of the Conservation and Correlation of Physical Forces." Matter and force are alike indestructible. Matter can neither be produced nor destroyed; its form or condition may vary endlessly, but its amount remains the same. Wood may be burned, and water may be evaporated, and become invisible, but they are not lost; both still exist in the condition of gases. Not a grain of matter has been lost from the world, and not a grain has been added to it, since the day of its creation. The same is true of force or energy. The sum of force, actual and potential, in the whole universe, is always one and the same; it cannot be increased, and it cannot be diminished. But while the forces of nature are indestructible, they are, like matter, changeable. One force is transmissible into another force. In other words, as a particular force disappears under one character, it reappears under another. A railroad train is stopped by the action of the brake; in that case the force of *motion*, which has disappeared, is transformed into *heat*, which manifests itself along every inch and at every point of friction. So light runs into heat, heat into electricity, electricity into magnetism, magnetism into mechanical force; and mechanical force again into light and heat. Hence it is held that all these are, substantially, *one and the same force*. "The more we know of nature," says the Duke of Argyll, "the more certain it appears that a multiplicity of separate forces does not exist, but that all her forces pass into each other, and are but modifications of some One Force, which is the source and centre

of the rest."* This is now regarded generally as an established truth. And how sublime is the thought: but One Power in the whole vast and complicated universe! manifesting itself now in gravity, now in electric flashes, now in chemical affinity, now in heat and motion, now in magnetism, now in the growth of plants and animals. This stands among the grandest of all scientific discoveries.

Now, the profoundest minds of the present day regard this One Force, not as a general property of matter, not as something apart from God or independent of Him, but as *the very power of God himself*. That earnest Christian, and prince of chemists, Faraday, at the close of a life of profound study and most splendid discoveries, came to believe that all force is *will-force*; and, as a consequence, that the whole universe is not merely dependent on, but is actuated in every part and particle by the will of the Supreme Being. The foremost of modern astronomers, Sir John Herschel, does not hesitate to say, that "it is but reasonable to regard the force of Gravitation as the direct or indirect result of a Consciousness or a Will existing somewhere."† And Professor William Whewell, no less distinguished as a mathematician, says, "The agency of the Divine Being pervades every portion of the universe, producing all action and passion, all permanence and change."‡ President McCosh, speaking of this doctrine of "One Force," says, "It furnishes a more striking manifestation

* *Reign of Law*, p. 275.

† *Outlines of Astronomy*, p. 291.

‡ *IVth Bridgewater Treatise*, p. 185.

than anything known before of the ONE GOD, with his infinitely varied perfections—of his power, his knowledge, his wisdom, his love, his mercy; it bids us see that *one power* blowing in the breeze, sparkling in the stars, quickening us as we bound along in the felt enjoyment of health, efflorescing in every form and line of beauty, and showering down daily gifts upon us.*

Thus the most recent and the grandest achievements of modern investigation carry us directly back to the plain and simple teachings of that priceless book, the New Testament. And thus true science ascribes to the great God the honor, which to Him alone belongs, but which perverted reason would thrust upon what it vaguely terms the "laws of nature." Always, and everywhere, did the Divine Instructor proclaim to men, that it is God who makes everything, plans everything, governs everything—that He maketh the sun to rise, the seasons to revolve, and food to spring out of the earth—that His active and unfailing providence is over every living man, every blushing lily, every fluttering sparrow, every falling hair. And now, after so long a time, we behold the great masters of modern science come to his feet, and, in willing response, say, "Amen: *even so*, Lord Jesus."

Beautifully, indeed, do all the statements and allusions of the Gospel, respecting the phenomena of nature, harmonize with the discoveries, and even the refinements of science. Had Jesus of Nazareth lived in the present

* *Christianity and Positivism*, p. 14.

day, and been familiar with all the discoveries of Newton and Herschel, Davy and Faraday, Owen and Agassiz, he could not have chosen happier terms, or employed language more strictly and philosophically correct, for public instruction, than he actually did. Nothing that is contradictory, nothing that is at variance with the established facts of nature, is to be found in any of his sentiments, or illustrations, or inimitable parables. No candid eye however keen, no honest mind however searching, has ever detected a single discrepancy between the record of science and the record of the evangelists. This is what cannot be said of the sacred writings of any other religion than Christianity. "The Shasters of the Hindoos contain false astronomy, as well as false anatomy and physiology; and the Koran of Mohammed distinctly avows the Ptolemaic system of the heavenly bodies; and so interwoven are these scientific errors with the religions of these sacred books, that when you have proved the former you have disproved the latter. But the Bible, stating only facts, and adopting no system of human philosophy, has ever stood, and ever shall stand, in sublime simplicity and undecaying strength; while the winds and the waves of conflicting human opinions roar and dash harmlessly around, and the wrecks of a thousand false systems of philosophy and religion are strewed along its base." *

* Hitchcock's *Highest Use of Learning*, p. 36.

II. LAWS OF NATURE—THEIR RELATION TO PROVIDENCE.

FROM the numerous quotations made in the preceding part of this chapter, it is sufficiently evident that the New Testament Scriptures teach us, that the Great Creator exercises a *Providence*, a controlling and directing power, a care and superintendence, over all that exists or takes place in the world, and in the universe. This is one of the most prominent doctrines contained in them, and is set forth clearly, repeatedly, and in almost every varied form of expression. No fact or truth could be stated more definitely and emphatically.

It is further to be observed, that the doctrine of providence is not simply to be found among other things in this sacred volume, but is a component and essential part of the system of truth which it sets forth. It is interwoven with that system throughout. It underlies its predictions and promises, it is recognized in its admonitions and encouragements, it enters into the duties it enjoins and the hopes it inspires; it stands in vital connection with the offering of prayers and the expectation of an answer to those prayers. So that with this doctrine the whole of the Christian Religion must stand or fall.

Now, few readers need be informed, that the Materialists of the present day, a class of men who deify the Laws of Nature, hold that the universal and immutable reign of these laws, observed throughout the universe, admits not of the exercise of any such providence or government on the part of God. Divine agency or inter-

position in the government of the world, such as providence implies, it is assumed, must necessarily be in conflict with natural laws—must occasionally, at least, interrupt or suspend their uniform operation.* But as no such interruption or suspension ever appears in any department or province of creation, it is inferred and boldly asserted that there can be no such providence as that taught by Christ and his apostles. The silent and undeviating march of natural order, discovered by science, we are told, leaves no room for personal agency; physical laws are unalterable in their action, and neither change nor bend, nor yield, either to accomplish or to defeat any result in which the interests of mortals may be involved. Accordingly we hear perpetually from this class of teachers of the fixed properties of matter—of the immutable forces of nature—of rigid and universal sequence, necessary, invariable—of unbroken chains of cause and effect, no link of which, in the nature of things, can be severed or dispensed with. Thus they can allow no place for Divine Providence, no room for prayer, no hope or comfort for the suppliant. Stoically it is asked—

“Think we, like some weak prince, the Eternal Cause,
Prone for his favorites to reverse his laws;
Shall burning Etna, if a sage requires,
Forget to thunder, and recall her fires;
On air or sea, new motions be impressed,
Oh, blameless Bethel, to relieve thy breast;
When the loose mountain trembles from on high,
Shall gravitation cease if you go by?”†

* See Comte's *Philosophy of the Sciences*, by Lewes, pp. 102, 103.

† Pope's *Essay on Man*, V. 121-128.

Hence we see, that according to this school of cold and comfortless philosophy nothing is left but for all to accept their inevitable fate as determined by the relentless Laws of Nature.

Such views and sentiments as these are obviously in plain and direct opposition to those taught by the Great Master. And no true disciple of his can hear them announced without experiencing a painful shock through all the most sacred sensibilities of his soul. But do the established conclusions of science bind us to accept them? Do the demonstrated facts of nature all array themselves, as materialists would have us believe, against the doctrine of providence? Are we brought by the discoveries of the day where we must unresistingly yield to be thus stripped of what we have ever fondly believed to have been over us—the care and protection of our Father in heaven? Are we hopelessly shut up to this dreary conclusion, that we are after all left to the mercy of inexorable laws, the helpless sport of blind and resistless elements? In the answer that may be given to these vital questions, every reflecting mind must feel an interest the most profound. And this is the point to the consideration of which we now advance.

It is true, indeed, that what are called the properties or forces of matter act according to uniform and invariable laws. Gravitation acts always and everywhere according to the same rule. Chemical combinations take place always and everywhere in the same inflexible proportions. The forces of light, heat and sound work always and everywhere after the same fixed and definite

modes. Magnetism and electricity operate always and everywhere in strict conformity to the same regulations. The searching investigations of philosophers have never detected one of these elements acting at variance with its established law; nor have scientific experiments been able to torture one of them for an instant, or in the slightest degree, to depart from its fixed rule. Each individual force of nature works under the same measures, weights, numbers and restrictions, in the deep sea and in the solid ground, in the rocky mountain and in the dancing mote, in the dew-drop and in the sand-grain, in the waves that restlessly rise and sink, and in the clouds that are rifted, or woven, or scattered before the wind.

All this is true; but it is only *a part* of the truth. While all this is admitted to be a fact, there is another fact quite as prominent and quite as certain, and which is this—that these individual forces or laws, according as they are combined, or opposed, or balanced one against another, in their operations, are capable of producing results infinite in number, and infinitely diversified. No *one* law or force determines anything that we see take place or done around us. Every production, every result that we behold in nature is the effect of different forces nicely balanced against each other. And the least disturbance, in which any one force is allowed by other forces to tell in an operation, produces a total change in the result. While it is entirely true that every law or force is, in its own nature, invariable; yet it produces the same effect only when it works under the same conditions in reference to other laws or forces. When

these conditions are changed, the effect in like manner will be changed. And as these conditions are actually susceptible of endless variations, the result may be endlessly varied.

It should be carefully observed, and ever be remembered, therefore, that there is only one sense in which it is true that any Law of nature is immutable, and that is the sense in which law is employed to designate *an individual force*. In all other senses in which the term is used, Laws are not immutable; on the contrary, they are the unceasing instruments of change. "No one of the agents, such as light, heat, the elasticity of vapors, and electricity, which perform so important a part in the aerial ocean, can exercise any influence without the result produced being speedily modified by the simultaneous intervention of all the other agents." *

"When, therefore, scientific men speak, as they often do, of all phenomena being governed by invariable laws, they use language which is ambiguous, and in most cases they use it in a sense which covers an erroneous idea of the facts. There are no phenomena visible to man of which it is true to say that they are governed by any invariable *force*. That which does govern them is always some variable combinations of invariable forces. But this makes all the difference in reasoning on the relation of Will to Law, of providence to physical affairs; this is the one essential distinction to be admitted and observed. There is no observed Order of facts which is not

* Humboldt's *Cosmos*.

due to a combination of Forces; and there is no combination of Forces which is invariable—none which are not capable of change in infinite degrees. In these senses—and these are the common senses in which Law is used to express the phenomena of nature—Law is not rigid, it is not immutable, it is not invariable, but it is, on the contrary, pliable, subtle, various.”*

Here, it may be worth while to glance at a few examples of the *variable results* that may be effected by *invariable laws*, operating in different combinations. The number of elementary substances, as before stated, is some sixty only, yet by different combinations of the fixed properties of this comparatively small number, all the vast variety of organized and unorganized existences, which diversify, and furnish and adorn the whole world have been produced. All the Forces of nature operate uniformly according to the same Laws throughout the year; yet by different combinations of these Forces, we have the ice and snow and barrenness of winter at one period, and the glory and luxuriance of summer at another. The clouds which overspread the face of the sky are perpetually changing their forms and positions and colors, but no Law of nature is violated or suspended; all is the result of different and shifting combinations of those Laws. The state of the weather is in continual fluctuation; to-day it is wet, or cloudy, or windy; to-morrow it may be dry, or warm, or calm; yet all the individual Forces of nature are in uniform

* Argyll's *Reign of Law*, p. 98.

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ASPECT OF THE EARTH IN THE GLACIAL PERIOD.

operation; the change is simply owing to different balancings of those forces. It is the common course of nature that like produce like; yet occasionally from perfect animals and perfect vegetables, monstrosities of organizations do occur; in the production of these no miracle is wrought, no physical Law is perverted; but the conditions under which Laws operate, in some particular or particulars, differ from the ordinary conditions. Human beings generally are so constituted that if certain substances, called poisons, be introduced into their systems, they will be destroyed; but now and then God produces a man who suffers no harm from them, and is even nourished by these agents so fatal to others; this impunity is not owing to any miraculous suspension of the poisonous properties of those substances, but to some peculiar physical conditions of such individuals. It has long been the course of this world that "seed time and harvest, cold and heat, summer and winter, and day and night," have returned to mankind in regular and beneficent recurrence; yet there has been such a thing as a general deluge, produced by a deep and widespread convulsion of the solid crust of the globe;—yea, if we may credit Geology, many repetitions of such a catastrophe; still there was in all these, our enemies being judges, no miracle, no contravention or suspension of established physical Laws; they were the necessary results of certain combinations of the unchangeable Forces of nature. The planet on which we live, under the moulding hand of God, at one period of its history, was one molten and glowing mass enveloped in a vast and fearful atmosphere

of seething steam; at another, encased in icy glaciers and lasting snows from pole to pole; and at the present period we find it enjoying every pleasing diversity both of soil and climate, and abounding in scenes of loveliness and grandeur: yet in all these marvellous revolutions there has been, Materialists themselves being our authority, no departure from the regular operations of physical Laws.—Such are a few illustrations of what *variable results* may be brought about by the action of *invariable Laws*, when acting under different conditions.

From the foregoing facts, it is evident, that the earth and the sea and the air might be made to pass through almost any imaginable changes; and that the living inhabitants of the world might be subjected to any sort or amount of physical evil, or be favored with any kind or degree of material good—might be visited with a drought or a deluge, with fruitful seasons or blighted fields, with an atmosphere that is salubrious or pestilential—without the slightest interference with the uniform operation of any one Law of nature. The fixedness of physical Laws, therefore, does not, as Materialists set forth, necessarily exclude Divine interposition. All the Providence which the Scriptures teach may be, and is exercised by the adjustment—by the crossing, or the balancing, or the opposing, of fixed Laws. So far are the fixed and invariable Laws of nature from excluding divine direction and control, that they demand it, and are the very instruments which God needs and employs to work out his sovereign will toward our whole race, and toward every living thing. In the endless combina-

tions of which the established Laws of creation are susceptible, God has ready to his hand suitable and abundant resources to bring about whatever change or vicissitude his infinite wisdom may see necessary for the government of the world, without recourse to any miraculous interposition.

All the conceptions we can form of God, as an omnipresent, omniscient, and omnipotent Being, bind us to believe that he is present—present in his entire Godhead—at each point of space, and through each instant of time; that He momentarily stands in immediate and active connection with every particle of matter in the universe—as immediate and active as in the moment He created it. He may, therefore, interpose among physical agents, for their mutual adjustment, beyond the reach of man's vision or sagacity; may determine their balancings where human science can neither trace nor human instruments detect the influence of his power, where all the workings of Laws known to man are lost and vanish in the Divine volition, whence all Laws and all Forces are derived. And all this interposition may be carried on, not arbitrarily or irregularly, but according to a uniform Law, but a higher Law than it is in the power of man to reach, a Law that has its field of operation among “the hidings of God's power.” In this lofty and impenetrable sphere, therefore, Divine Providence may hold its empire for the accomplishment of all its purposes. From this hidden and inexhaustible *magazine of combinations*, the Governor of the world can draw with infallible skill the agencies of his dispensa-

tions toward every human being and everything that hath life. We hold, therefore, that God can thus exercise, as the Scriptures emphatically declare, a special providence over the interests of the world at large, and of each individual in it, *in perfect harmony with all the known Laws of Nature*. Nor has science, among all its accumulated discoveries, a single fact to offer that is opposed to, or at variance with this view; and more than this, neither will science ever be able to adduce, whatever its future triumphs may prove, a single such fact, for the matter lies wholly and forever beyond the reach of its investigations.

The argument, drawn against the doctrine of Divine Providence from the fixedness of the Laws of Nature, therefore, is without weight or power, and falls harmlessly to the ground; like a spent ball, it loses all its force long before it reaches the mark it was designed to strike.

All the deep-seated instincts of human nature, and all the profoundest researches of philosophy, alike point to the ETERNAL MIND as the one and only source of power. The notion that the world is a self-adjusting and self-regulating machine is as shallow as it is unphilosophical. The mechanic constructs his little engine, and can leave it to work at its intended purpose; and hence some have leaped at the conclusion that God has done the same with regard to the world. But there is no parallel, no relation, between the two cases to offer the slightest foothold for the comparison. The two contrivances and the two contrivers are both essentially different in their nature. Man leaves his machine to be conducted by

the Laws of nature—by the force of gravitation, or the pressure of steam, or the currents of the air, that is, by the agency of the Creator; but if God should leave his work, there is no other God by whose agency it will be carried on. Let Him withdraw his power, and all motion on the earth and in the heavens comes to an end; or let Him suspend his governance, and the universe rushes into ruin. As it required omniscience and omnipotence to produce the world, so it requires the unremitted exercise of the same Divine attributes to preserve and govern it. And the real philosopher no less than the true Christian rejoices that the Lord God omnipotent reigneth over all.*

* The distinguished Dr. William B. Carpenter, late President of "The British Association for the Advancement of Science," in his masterly address on retiring from the chair, administered a severe but just rebuke to those who seek to array the facts of science against the truths of Revelation. Among other things, he said—"When science, passing beyond its own limits, assumes to take the place of Theology, and sets up its own conception of the order of nature, as a sufficient account of its cause, it is invading a province of thought to which it has no claim. . . . To set up these Laws as self-acting, and as either excluding or rendering unnecessary the power which alone can give them effect, appears to me as arrogant as it is unphilosophical. To speak of *any* Law as 'regulating' or 'governing' phenomena, is only permissible on the assumption that the Law is the expression of the *modus operandi* of the governing power. . . . Those who set up their own conceptions of the orderly sequence which they discern in the phenomena of nature as fixed and determinate Laws, by which those phenomena not only are within all human experience, but always *have been* and always *must be*, invariably governed, are really guilty of the intellectual arrogance they condemn in the systems of the ancients, and place themselves in diametrical antagonism to those real philosophers by whose comprehensive grasp and penetrating insight that order has been so far disclosed. . . .

The history of the globe, as deciphered by the science of geology, presents numerous unquestionable evidences of a superintending and directing Providence, through all those vast successive periods of its formation which preceded the creation of man. This history exhibits *facts*, which cannot be accounted for by the action of Law, facts which can be ascribed only to supernatural wisdom and power. Of these our space will allow us to notice but a few, and that briefly.

(1.) The Scriptures teach us that this material world is not eternal, but had a beginning; and natural philosophy has now demonstrated this to be true. It is a creation, effected in time. In the existence, then, of the very globe upon which we stand, we behold the direct exercise of God's wisdom and power.

(2.) Nature has its laws; is, we are told, under "the reign of laws;" but laws are not self-originated, nor self-sustained; they must have had a Law Maker. In the very institution of these laws, then, again, we witness the presence and agency of the same divine wisdom and power.

(3.) The inorganic substance of the earth offers similar evidences. We know of no law, or laws, that will account for that wonderful *composition* and exquisite *texture* of the rocks, which made them store-houses of the very food which *future* plants, plants to be created after the

That Order of nature *is worshipped as itself a god* by the class of interpreters whose doctrine I call in question. . . . The *real* philosopher is one who always loves truth better than his system." This address was delivered in the summer of 1872.

lapse of ages, would require. In the *arrangement* of the strata of rocks also, an arrangement carried on through unmeasured periods, we behold in every advancing step such an obvious regard to the constitution and wants of coming man, as cannot be ascribed to the blind action of unintelligent laws, without doing violence to Reason. No law or laws can be pointed out whose action would have determined the place, the thickness and the texture of the strata so admirably as we find them. No law can be indicated which will explain how the iron, the silver, the gold, the coal, and the lime, all so important to man, have been placed just *where they are*, so accessible to his hands. No action of law will rationally account for these adjustments and provisions. Every force and every substance in nature, as with an audible voice, disclaim the credit, and bid us look away from *them* to that presiding intelligence and controlling power, which all along ordered these things according to the counsel of the eternal Will.

(4.) When the earth in its process of preparation had reached the proper stage, the Divine agency becomes still more manifest in the introduction of *Plant-life*. In this we have a product altogether above all physical laws. In this we have a new power on the earth—*vital force*, a thing which no combination of materials, and no co-operation of forces, before in existence, could produce. No physicist can pretend to show that it was evolved from pre-existing materials. "All that chemistry has achieved amid transformations which often startle, and always instruct us, has failed to organize a single form in which

life may take up its abode. Life makes its own form, and plies its own force. Plant-life was a *new* thing in our world." It was a supernatural production—it was from God.

(5.) At a later period, the agency of the Creator, never absent from the forming world, displayed itself more conspicuously still in the creation of *Animal-life*. This again was totally distinct from, and in essential respects far above, plant-life. Alike in its lowest and highest forms, life had its origin in God. He is the Giver and the Lord of all life. The idea of "spontaneous generation," once so boldly put forth, has been extinguished by the experiments of M. Pasteur, whose investigations of this subject even Huxley has pronounced "models of experimentation and logical reasoning." And Darwin himself admits that "life was first breathed by the Creator into two or three simple forms." In the introduction of life, therefore, we again behold the working of the Divine Hand.

(6.) Descending still with the flow of time, we witness, as we approach the period of man, a series of changes and adjustments in the vegetation and among the living tenants of the sea and land, gradually preparing the world to be a fit habitation for him. Nature, in all her provinces, seems moved into co-operation for this end. Many of the old animals and many of the old plantal growths that are unfit to be his contemporaries fade out of existence, and the earth is stored with new plants, and animals, such as are more suitable to meet his wants and to administer to his comfort, are brought forth.

Fruit-bearing trees, such as the apple, pear, peach, plum, cherry, etc.; and grain-giving plants, such as wheat, barley, oats, etc., are now introduced. Many of the gigantic and destructive quadrupeds of former periods are weeded out, and others more suitable for the service of man take their place, and notably among these is the sheep, which would serve to supply him with both food and clothing. And even in the waters, a corresponding change takes place; not until this comparatively recent period did the sea become the home of fishes whose flesh would prove tasteful and wholesome to man; now it is that "the nutritious cod, the savory herring, the rich-flavored salmon, and the succulent turbot" make their appearance, and multiply and displace many of those species which were coarse and unfit for food. These new vegetable growths, and these new living creatures, all so necessary and so valuable to man, do not appear until close on to the era of his creation.—Now, no known law, or combination of laws, can account for these marked changes in the sea and on the land, at this particular period. Nothing but the purpose and the power of the Creator can offer any explanation of them. So both Agassiz and Hugh Miller viewed them. And in them we cannot but see and recognize the exercise of a ceaseless and all-embracing Providence.

(7.) The earth having been thus fitted and furnished, we presently again witness the most wonderful and the most convincing evidence of the immediate presence and direct agency of God in the creation of *Man himself*—a being immeasurably above all that preceded him—a

being possessing an immortal spirit, and endowed with a reasoning mind and a directing conscience, capable of knowing, loving, and serving his Glorious Creator.

Such are a few examples of the FACTS which offer incontestable proof, that throughout the whole vast period of the earth's geological history, God exercised a ceaseless and all-controlling Providence over all the progressive changes of the globe—that His hand and counsel were concerned in every arrangement and every product that contributed toward its completion as a habitation for man. And if so, what ground or reason can there be to suppose, that He has discontinued or suspended that Providence in the present far more interesting and important period of its history? When God had finished this beautiful world, whose formation and furniture occupied his mind and hands for so many ages, is it credible that He then at once cast it aside, as a thing neglected, and no longer worthy his care or attention? That were a most unworthy and derogatory notion indeed—that were to sink the All-wise Being beneath the conduct of a rational creature. Nay—now that the earth is freighted with both the temporal and immortal interests of all humanity, for whom the world was made, have we not infinitely greater reasons to believe in a providence that is unslumbering and unremitting in its care over all?

A world without Divine Providence! what would it be? to what would it come? When we contemplate the multiplicity of elements and agencies that are in the world; the diversity of potent Forces that perpetually

combine, or cross, or oppose one another; all of which must be kept in their due and fitting exercise without fail or cessation, in order to ensure the safety and to meet the wants of its countless living tenants—and when we further consider that, as a defect in one tooth of the smallest wheel of a chronometer will derange the motion of all its other parts, so a failure or error in the working of one force or one element in the complicated machinery of the world might propagate derangement and destruction to its utmost bounds—one trembles at the very thought of the Almighty suspending or withdrawing for an hour his providential care and rule over it.

How numerous and varied are the relations and adjustments of inorganic elements to the functions of life! How delicate are these relations, and yet how tremendous are the issues depending upon their right and infallible management! This will be readily perceived from a few facts. The same elements combined in one proportion are sometimes nutritious food, or grateful stimulant, soothing and sustaining the powers of life; whilst in another proportion, they may be a deadly poison, paralyzing the heart, and carrying agony along every fibre and nerve of the body. Take Tea and Strychnia—the active principle of these two substances, Theine and Strychnine, are identical, so far as their elements are concerned, and differ from each other only in the proportions in which they are combined. Take again Sugar and Oxalic Acid—the first is a pleasant condiment, the second a destructive poison; yet they are composed of the very same elements, and sugar may

readily be converted into this deadly acid. Again, let hydrogen gas, which forms so large a proportion of the water we drink, become mixed with chlorine, and the moment the influence of Light falls upon them, they unite with explosive violence. Again, if nitrogen gas, which constitutes four-fifths of the atmosphere we hourly breathe, be mixed with hydrogen, it forms the pungent Ammonia; with carbon, and it gives the poisonous Cyanogen, which forms the base of Prussic Acid; with chlorine, and it yields a fluid, which when touched by an unctuous body explodes more violently than any other known substance; and combined with other materials, it produces fulminating compounds of the most dangerous character. What misery, what havoc, then, in this world, now so full of life and happiness, if such elements as these were left to combine and act by chance or accident!

Once more: Let us devote a moment to contemplate the constitution of the air we inhale. This is composed of one part of oxygen to four parts of nitrogen; and upon the maintenance of this exact proportion of these gases depends the life of every creature that breathes. Let this proportion be changed but a trifle one way or another, or let the relative weights of the two gases be but slightly varied, and we have an atmosphere of death. The composition of the atmosphere cannot be changed in one particular, or in any degree, without fatal results to all animals, and even to all plants. But what vast and varied agencies there are in constant activity, all of which are calculated to derange and corrupt the whole constitution of the air round about us—the immense and

ceaseless exhalations from sea and land, from pestilential marshes, from thousands of crowded cities, and millions of rotting carcasses; the hot and sulphurous fumes of four hundred active volcanoes that are day and night breathed into it; the blaze and rush of lightning that rift and agitate it; the smoke and steam that arise from the hearthstones of all human habitations; the corrupted breaths of our whole race and of all the brute creation—if all these were left to blind chance, left to accumulate and flood thick and heavy at random over the face of the earth, then the glory of this terrestrial abode had departed, all life had been extinguished, and all beauty faded out of existence. *Ichabod* might be inscribed on all the scenes that now delight our eyes and gladden our hearts!—What, then, less than everpresent and almighty Power can perpetually watch over and carry all these through new and renovating combinations, and thus maintain the constitution of the atmosphere in its integrity and purity, through every season of the year and over every region of the globe?

To all the above, we may add another fact of interest, bearing directly on the point before us. The atmosphere is pervaded by an element called *Azone*, which, as the recent experiments of Schonbein have proved, is developed by the processes of combustion, respiration, and particularly electrical discharges. This is an active agent in removing from the atmosphere *organic poisons*, to which many forms of pestilence are traceable. The prevalency of *Azone*, unlike oxygen and nitrogen, is variable; and it is a most interesting fact, that a deficiency

of atmospheric Azone marks the prevalency of Cholera, and an excess distinguishes the reign of Influenza. Here, then, is another element, which, left to its own guidance, might now oscillate to one extreme, and generate a class of diseases that might in a single season decimate the human family; and then, like the pendulum, swing to the opposite extreme, and bring on other pestilential scourges that would again fill the habitations of the residue with lamentation and mourning and woe.* *A world without Divine Providence! what would it be? to what would it come?*

"There are certain philosophers," says President McCosh, "who are ever talking of the Laws of Nature, as if they could accomplish all that we see in the earth and heavens, without the necessity of calling in any Divine skill to arrange them. We have sometimes thought that it might be an appropriate punishment to deal with such persons as Jupiter did with those who complained to him of the way in which he regulated the weather. We would give the philosophers referred to a world of their own, with all the substances of nature, and their properties labeled upon them, and arranged according to human science, much like the articles in a museum, or an apothecary's shop. We would place the Mineralogist over the metals, and the Anatomist over the animals, and the Botanist over the vegetable substances; we would give the Meteorologist charge of

* For many other interesting and instructive particulars connected with the composition of the atmosphere, the reader is referred to a work of the author, entitled *Science and the Bible*, pp. 101-107.

the atmosphere and rain, and we would furnish the Astronomer with those *nebulæ*, out of which it is supposed that the stars are formed as webs are formed out of fleeces of wool. Having called these philosophers together in cabinet council, we would there commit to them these *principia* of worlds. Taking care to retire to a respectful distance for safety, it might be curious to listen to their disputes with one another; and then, when they had arranged their plans of operation, to find the Chemist blown up by his own gases, and the Mineralogist sinking in the excavations which he had made, and the Anatomist groaning under disease, and the Botanist pining for hunger, and the Weather Regulator deluged with his own rain, and the Astronomer driven ten thousand leagues into space by the recalcitration of some refractory planet. We may be sure that these philosophers would be the first to beg of Him who is the Disposer as well as the Creator of all things, to resume the government of his own world."*

Well may Dr. Carpenter charge this class of men with arrogance. The assertion that, because what are called the Laws of Nature are fixed to us, the Divine Father cannot exercise through those Laws a special providence toward his children, can proceed only from a presumptuous imagination of the most unworthy kind. What qualification can the wisest among men claim to pronounce a decision so positive in reference to the conduct of the Infinite and Mysterious Being? To compare great

* *The Method of the Divine Government*, p. 110.

things with small—A Grammarian may be acquainted with the sounds of all the letters and the meaning of all the words in a language; but would this qualify or enable him to state confidently all the possible ideas and all the shades of meaning that a master-mind might set forth with those letters and words? Any pretence to do such a thing we should put down as simply foolish. Equally absurd is it for men, from their elementary and imperfect knowledge of the properties or forces of matter, to assert that under the all-comprehending control of the Almighty they may not be combined and directed to minister specifically to the wants and welfare of every human being. Nay, more absurd is it—for the foremost naturalists of the day have not yet mastered even the alphabet of the vast and complicated system of nature. Who among them all can tell us, What is Light? What is Matter? What is Magnetism? What is Gravitation? What is Heat? What is Life? What and how many are the Original Elements of matter? What is that Affinity which holds them in combination? What is the Duration of our globe? When and how was it moulded? To what physical destiny does it tend? Who can answer these questions? Who will pretend to answer them? On not one of these questions are the views of scientific men settled. The same holds true of numerous other subjects.

What humbling confessions have efforts ever baffled wrung from the keenest and most vigorous intellects of living physicists! Here is Herbert Spencer's—"After no matter how great a progress in the colligation of facts,

and the establishment of generalizations ever wider and wider—after the merging of limited and derivative truths, in truths that are larger and deeper, has been carried no matter how far; the fundamental truth remains as much beyond reach as ever. The explanation of that which is explicable, does but bring out into greater clearness the inexplicableness of that which remains behind. Alike in the external and the internal worlds, the man of science sees himself in the midst of perpetual changes of which he can discover neither the beginning nor the end. . . . In all directions his investigations eventually bring him face to face with an insoluble enigma; and he ever more clearly perceives it to be an insoluble enigma.”*

“To assume,” says Lyell, “that the evidence of the beginning or end of so vast a scheme lies within the reach of our philosophical inquiries, or even of our speculations, appears to be inconsistent with a just estimate of the relations which subsist between the finite powers of man and the attributes of an Infinite and Eternal Being.”†

Prof. Tyndall is compelled to use similar language: “If you ask me,” says he, “whether science has solved, or is likely to solve, the problem of this universe, I must shake my head in doubt. We have been talking of matter and force; but whence came matter, and whence came force? Who made all these starry orbs? Science makes no attempt to answer. As far as I can see, there

* *First Principles*, I., 3, § 21.

† *Principles of Geology*, Vol. II., p. 613, tenth edition.

is no quality in the human intellect which is fit to be applied to the solution of the problem. The phenomena of matter and force lie within our intellectual range, and as far as they reach we will at all hazards push our inquiries. But behind, and above, and around all, the real mysteries of this universe remain unsolved; and here the true philosopher will bow his head in humility, and admit that all he can do in this direction is no more than what is within the compass of an ordinary child.*

We see, then, that the bold and undevout denial of Divine Providence, made by certain men of science, is stamped, by their own confession of ignorance, as presumptuous and arrogant in the highest degree. Whatever authority their names may carry with them in scientific circles, they weigh not a feather against this sublime doctrine of the Gospel; nor should their learned and imposing vocabulary move any for a moment to the disuse of the terms and similitudes in which it is therein set forth—terms and similitudes simple yet beautifully true. Nothing that Natural Science has yet brought to light demands the slightest modification of one expression employed by the Saviour to teach us the watchful care of our Father in heaven over us. His utterances were not notions, not theories, not opinions—but TRUTHS. And it is with satisfaction unspeakable that we now return to the feet of this meek and wise and holy Teacher sent from God, to whose mind the Laws and Forces of nature, in all their endless intricacy of action

* *Lecture to Working Men, at Dundee, 1867.*

and reaction were clearly seen and fully understood at each passing moment. And it is with feelings of joy and devotion that we take our place among the multitude that He is leading abroad into the open fields of nature, where, on touching their eyes, He surprises them with the sight of the Hand, which upholds the universe, employed in painting the lily of the field, feeding the fowls of the air, and adjusting and succoring the descent of the falling sparrow! Never man spake as the man Christ Jesus.

“What life and beauty, when, in all that breathes,
Or moves, or grows, His Hand is viewed at work!
When it is viewed unfolding every bud,
Each blossom tinging, shaping every leaf,
Wafting each cloud that passes o’er the sky,
Rolling each billow, moving every wing
That fans the air, and every warbling throat
Heard in the tuneful woodlands!”—WILCOX.

III. LAWS OF NATURE—THEIR BEARING ON ANSWER TO PRAYER.

No duty, no religious exercise, occupies a larger or more prominent place in the Christian system than PRAYER. The New Testament Scriptures throughout abound with precepts, examples, forms, promises, and encouragements in regard to the obligation and benefit of thus devoutly addressing the Father of Mercies. Indeed this Sacred Volume may be regarded as the “Common Prayer Book” of the human family. It teaches us both how to pray and what to pray for; and assures us in the most express terms and emphatic

manner of the efficacy of prayer, as means of obtaining from God blessings both temporal and spiritual. The broad command and unqualified promise given are, "Ask, and ye shall receive; seek, and ye shall find; knock, and it shall be opened unto you."

To engage and establish men in the exercise of prayer, our blessed Lord delivered the several parables of *The Widow and the Unjust Judge*, of *The Pharisee and the Publican in the Temple*, and of *The Friend coming to a Friend at midnight*. And to convince us of God's loving readiness to hear and answer the prayers of his earthly offspring, He appeals to, and reasons from the tenderest and strongest affection of the human heart—*parental Love*. "If a son ask bread of any of you that is a father, will he give him a stone? or, if he ask a fish, will he for a fish give him a serpent? or, if he shall ask an egg, will he offer him a scorpion? If ye, then, being evil, know how to give good gifts unto your children, how much more shall your heavenly Father give good things to them that ask Him?" And in harmony with all this it is added that, "Men ought always to pray and not to faint," seeing "the same Lord over all is rich unto all that call upon Him."

Thus plainly do the New Testament Scriptures teach us the duty and benefit of Prayer—that by means of it a process of real and actual interchange between every soul of man on earth and God in heaven may be established, a process of ascending petitions on the one side and of descending mercies in answer to them on the other. In short, the Gospel enjoins and fosters the belief, that

by prayer, *believing prayer*, we may grasp the hand of Omnipotence, and hang on the neck of Infinite Love, in full assurance that, whatever we ask according to his will, shall be given us.

PRAYER FOR FOOD, PROTECTION, AND SUCCESS.

PLAIN and positive as the above teachings are, and coming to us with the authority of the Divine Master as they do, yet there are not wanting in these days men bold enough to cast their own individual authority into the scales against His, and to question and qualify and limit the statements which He has made, and to tell us that so far as "any material or physical benefits," at least, are concerned, prayer has no such power with God, and results in no such advantages to man. They scruple not to assert, that human supplications, however earnest or persevering, can have no influence in the "visible universe," can procure no "material benefit," can ward off no "physical danger"—in brief, can in nowise change or affect man's *earthly lot*. Prayers offered to be saved from the ravages of disease or famine, or to be favored with food, health and security they smile at, as none other than the effusions of ignorance and superstition.

In order to show both plainly and fairly the position taken by these sceptics, we quote a few sentences from one that is regarded a leader among them. Professor John Tyndall, speaking of the ancient devout custom observed among the Tyrolese, of offering annually a special prayer for favorable weather and a fruitful season, says, "Year by year the Highest was entreated by

official intercessors, to make such meteorological arrangements as should insure food and shelter for their flocks and herds. . . . In this the Priest did not deem that he asked the Creator to perform a miracle, but to do something which he manifestly thought lay quite within the bounds of the natural and non-miraculous. . . . But Law teaches us that the Italian wind gliding over the crest of the Matterhorn is as firmly ruled as the earth in its orbital revolution round the sun; and that the fall of its vapor into clouds is exactly as much a matter of necessity as the return of the seasons. The dispersion, therefore, of the slightest mist by the special volition of the Eternal, would be as much a miracle as the rolling of the Rhone over the Grimsel precipices and down Haslithal to Brienz. . . . Science asserts that without a disturbance of natural Law quite as serious as the stoppage of an eclipse, or the rolling of the St. Lawrence up the Falls of Niagara, no act of humiliation, individual or national, could call one shower from heaven, or deflect toward us a single beam of the sun.”*

These assuredly are bold assertions, and that, whatever else may distinguish their author, reveal a mind in this instance at least, far enough from the modesty of true science and from the humility which usually characterizes real greatness. Here, instead of a Newton comparing himself to “a little child gathering a few pebbles on the shore, while the vast ocean of truth lay unexplored before him,” we have an individual speaking

* *Fragments of Science*, pp. 38-40.

apparently with the confidence and authority of one who had been admitted into the *Penetralia* of the upper sanctuary, and to whose mind the whole agency of God together with all the mysteries of the universe were familiarly present. Here is a man *heroic* enough to set a limit to the operations of the Infinite, and to pronounce the clear developments of his word inconsistent with those of his works. The undevout assurance, not to say arrogance, underlying such assertions, forcibly reminds us of the familiar lines—

“As, if upon a full-proportioned dome,
On swelling columns heaved, the pride of art!
A critic fly, whose feeble ray scarce spreads
An inch around, with blind presumption bold,
Should dare to tax the structure of the whole.”

Most deliberately, because most safely, we may say, that there is not a man living, whose knowledge of the complicated and mysterious operations carried on in the vast laboratory of Nature is so complete, or whose understanding of God's connection with those operations is so clear and certain, as to warrant or justify him in the naked assertion, that the Almighty God, who upholdeth all things by the word of his power, and by whom all things consist, cannot answer the prayer of faith for timely rain, or fruitful seasons, without disturbance of the established laws of nature. Man cannot *think* beyond what God can *do*.

On what ground does Mr. Tyndall hold prayer for material blessings to be a delusion, and an answer to such prayer a thing incredible? Is it on account of

some inherent unreasonableness in the act of prayer? or because supplication to the Most High is inconsistent with some self-evident truths or fundamental principles? No; he has no such ground on which to base his objection; on the contrary, he is constrained to make this admission—"The theory," says he, "that the system of nature is under the control of a Being who changes phenomena in compliance with the prayers of men, is, in my opinion, a perfectly legitimate one. It may of course be rendered futile by being associated with conceptions which contradict it, but such conceptions form no necessary part of the theory. It is a matter of experience that an earthly father, who is at the same time both wise and tender, listens to the requests of his children, and, if they do not ask amiss, takes pleasure in granting their requests. We know also that this compliance extends to the alteration, within certain limits, of the current of events on earth. With this suggestion offered by our experience, it is no departure from scientific method to place behind natural phenomena a universal Father, who, in answer to the prayers of his children, alters the currents of those phenomena. Thus far Theology and Science go hand in hand. The conception of an ether, for example, trembling with the waves of light, is suggested by the ordinary phenomena of wave-motion in water and in air; and in like manner the conception of personal volition in nature is suggested by the ordinary action of man upon earth. I therefore urge no *impossibilities*; I do not even urge inconsistency; but, on the contrary, frankly admit that you have as

good a right to place your conception at the root of phenomena as I have to place mine. But without *verification* a theoretic conception is a mere figment of the intellect, and I am sorry to find us parting company at this point. The region of theory, both in science and theology, lies behind the world of the senses, but the verification of theory occurs in the sensible world. To check the theory we have simply to compare the deductions from it with the facts of observation. If the deductions be in accordance with the facts, we accept the theory: if in opposition, the theory is given up.”*

Professor Tyndall's position then is plain: he denies the efficacy of prayers for any material or physical favors simply on the ground that he has no sensible evidence or verification that they are answered; and the evidence or verification which he looks for and demands is, to use his own words, “the disturbance of natural Law.” But as no such disturbance is ever observed to take place, he concludes that no such prayer is ever answered. With this scientist the authority of the Holy Scriptures in the case is nothing. The testimony of inspired Prophets, though confirmed by the most signal fulfilment of their predictions, is altogether ignored. And the teachings of Jesus Christ himself, whose Divine Commission is established by evidences varied, numerous, and most conclusive, are allowed no weight, no place, in the settlement of this point. And it is nothing to him that good men in all ages and of all countries—many of them in acute-

* *Contemporary Review*, October, 1872, p. 764.

ness and vigor of intellect not a whit inferior to himself—testify as with one voice from their personal experience that God does hear and answer prayers for such blessings. He must have his own chosen evidence, and none other. Like one of old, he has selected his test, and except he shall see in his hands the print of the nails, and put his finger into the print of the nails, and thrust his hand into his side, he will not believe. By “disturbance of natural Law” only, in his estimation, can such prayers be answered, and such disturbance he must witness, or he will not believe.

Such is the position taken by Mr. Tyndall and others. The bearing of these materialistic views, not on prayer only, but also on Divine Providence, and indeed on the whole system of the Christian Religion, is sufficiently evident: if these views are true and correct, then the teachings of Christ and his Apostles cannot be so; the doctrines they have delivered us are vain, and our hopes and devotions founded on them are vain also. Henceforth our worship, as another master of this school intimates, must be “for the most part of the silent sort, at the altar of the *unknown* and *unknowable*.”* We are happy in the belief, however, that no developments that have yet been made by these or any other scientists force us to accept such views or to occupy so cheerless a position. “They worship they know not what: we know whom we worship.”

When we pray for such material or physical blessings

* Huxley's *Lay Sermons*, p. 16.

as we need, we do not admit—facts do not require us to admit—as the scientific sceptic would have us, that we ask God to perform miracles; and if God hear, and see fit to grant such requests, we do not believe that He must necessarily disturb the order of Nature to do so. If with an humble and believing heart we offer the petition taught us by the Great Teacher, *Give us this day our daily bread* ;* or with the Apostle James offer *the prayer of faith for the healing of the sick* ;† or with St. Paul *make request for a safe journey* ;‡ or with the Church of Corinth *ask to be prospered in business* ;|| or with the Christians of Jerusalem *pray for deliverance from the invasion and assaults of armies* ;§ or with the Philippians *look on high for the supply of all our need* ¶—we believe that God can grant any or all of these favors, and that without the violation or disturbance of any Law of Nature.

In the preceding chapter we have seen that every change or production observed in Nature is the result, not of any *one* particular Law or Force, but of a number of Forces suitably balanced in regard to one another—that while every Law or Force is, in its own nature and operation, fixed and invariable, it produces the same effect only when it works under the same conditions in reference to other Laws or Forces—that as these conditions are susceptible of endless variation, results may be endlessly varied without the violation or suspension of the operation of a single Law or Force; and from the

* Matt. vi. 11.

† James v. 15.

‡ Rom. i. 10.

|| 1 Cor. xvi. 2.

§ Luke xxi. 36.

¶ Phil. iv. 19.

series of examples there adduced of the *variable results* actually effected in sea and land and air, in soil and climate and production, by the action of *invariable and inflexible Laws*, we can readily understand how God, in answer to prayer, can grant any material blessing or physical benefit without the slightest disturbance of any natural Law.* By simple adjustment or balancing of the Forces of Nature, the Great Ruler of all, when his people cry, can send or withhold rain, can restore health or ward off disease, can grant favoring winds to the mariner or fruitful seasons to the husbandman, without disturbing in the slightest degree the established order of Nature. All Force, all Energy, in operation in the universe, being none other than the Force or Energy of HIS OWN OMNIPOTENT WILL, manifesting itself under different phases, *He can interpose among physical agents for their mutual adjustment beyond the reach of man's vision or sagacity; can determine their balancings where human science cannot trace, nor human instruments detect the influence of his power—where all the workings of Laws known to man are lost and vanish in the Divine Volition, whence all Laws and all Forces are derived.* In this way God may answer the prayers of his children without the intervention of what we call a miracle, and in perfect harmony with all the known and unknown laws of creation.

Here is an humble and believing suppliant—an event

* The reader is requested to turn back, and review pages 84-86, and consider the several facts there set forth in their bearing on *Answer to Prayer*.

takes place, according to the usual course of Nature, that brings to him the very favor for which he had made request; now we affirm that it does not lie within the power or reach of human science, as sceptics assume, to determine whether the Divine Volition was or was not directly concerned in such an event, and that, for the simple reason that man cannot trace back the chain of antecedents and consequents concerned in bringing it about, but a very few links only; the profoundest scientist, after he has taken less than half a dozen steps in this direction, finds himself out of his depth. He witnesses an event *A*, transpiring before him; *Z*, we will say, is its ultimate cause: he may be able to discern that *A* was produced by *B*, and that *B* in some way resulted from the influence of *C*, and that *D* in connection with unknown agents had something to do in the bringing about of *C*; here he is brought to a stand, while all the long series of agencies and connections beyond running up to *Z* are to him altogether unsearchable. "Observation," says a late writer, himself a distinguished philosopher—"observation may conduct us a certain length backwards in the train of causes and effects; but, after having done its uttermost, we feel, that, above and beyond its loftiest place of ascent, there are still higher steps in the train which we vainly try to reach, and find them inaccessible.

"It is even so throughout all philosophy. After having arrived at the remotest cause which man can reach his way to, we shall ever find there are higher and remoter causes still, which distance all his powers of research, and so will ever remain in deepest concealment

from his view. Of this higher part of the train he has no observation. Of these remoter causes, and their mode of succession, he can positively say nothing. For aught he knows, they may be under the immediate control of higher beings in the universe; or, like the upper part of a chain, a few of whose closing links are all that is visible to us, they may be directly appended to the throne, and at all times subject to the instant pleasure of a prayer-hearing God. And it may be by a responsive touch at the higher, and not the lower part of the progression, that He answers our prayers. It may be not by an act of intervention among those near and visible causes, where intervention would be a miracle; it may be by an unseen, but not less effectual act of intervention, among the remote and therefore the occult causes, that He adapts Himself to the various wants, and meets the various petitions of His children. If it be in the latter way that He conducts the affairs of His daily government—then may He rule by a providence as special, as are the needs and the occasions of His family; and, with an ear open to every cry, might He provide for all, and administer to all, without one infringement on the uniformity of visible nature.

“It is not by a visible movement within the region of human observation, but by an invisible movement in the transcendental region above it, that the prayer is met and responded to. The Supernal Power of the Universe, the mighty and unseen Being who sits aloft, and has been significantly styled the Cause of causes—He, in immediate contact with the upper extremities of every

progression, there puts forth an over-ruling influence, which tells and propagates downwards to the lower extremities; and so, by an agency placed too remote either for the eye of sense or for all the instruments of science to discover, may God, in answer if He choose to prayer, fix and determine every series of events—of which nevertheless all that man can see is but the uniformity of the closing footsteps—a few of the last causes and effects following each other in their wonted order. It is thus that we reconcile all the experience which man has of nature's uniformity, with the effect and significance of his prayers to the God of nature. It is thus that at one and the same time, do we live under the care of a presiding God, and among the regularities of a harmonious universe.

“God hath in wisdom ordained a regimen of general laws; and, that man might gather from the memory of the past, those lessons of observation which serve for the guidance of the future, He hath enacted that all those successions shall be invariable, which have their place and fulfilment within the world of sensible experience. Yet God has not, on that account, made the world independent of Himself. He keeps a perpetual hold on all its events and processes notwithstanding. He does not dis sever Himself, for a single instant, from the government and the guardianship of His own universe; and can still, notwithstanding all we see of nature's rigid uniformity, adapt the forthgoings of His power to all the wants and all the prayers of His dependent family. For this purpose, He does not need to stretch forth His hand on the

inferior and visible links of any progression, so as to shift the known successions of experience; or at all to intermeddle with the lessons and the laws of this great schoolmaster. He may work in secret, and yet perform all His pleasure—not by the achievement of a miracle on nature's open platform; but by the touch of one or other of those master springs, which lie within the recesses of her inner laboratory. There, and at His place of supernal command by the fountain heads of influence, He can turn whithersoever He will the machinery of our world, and without the possibility of human eye detecting the least infringement on any of its processes—at once upholding the regularity of visible nature, and the supremacy of nature's invisible God.*

In the physical world the connection between a particular cause and its immediate effect, in general, may be clearly traced and established; but in the providential and spiritual worlds, from the nature of things, this is not so easily done. The connection between prayer and its answer, not being visible or tangible, we may not be able to trace and prove it to the satisfaction of the sceptic, while at the same time it may be as real, and to the believing soul as certain, as that between the attracting moon and the heaving tide. It will be in place here, therefore, by way of illustration to introduce a few instances of providential occurrences, in which pious minds have ever recognized the hand of God working out his answer to the prayer of faith.

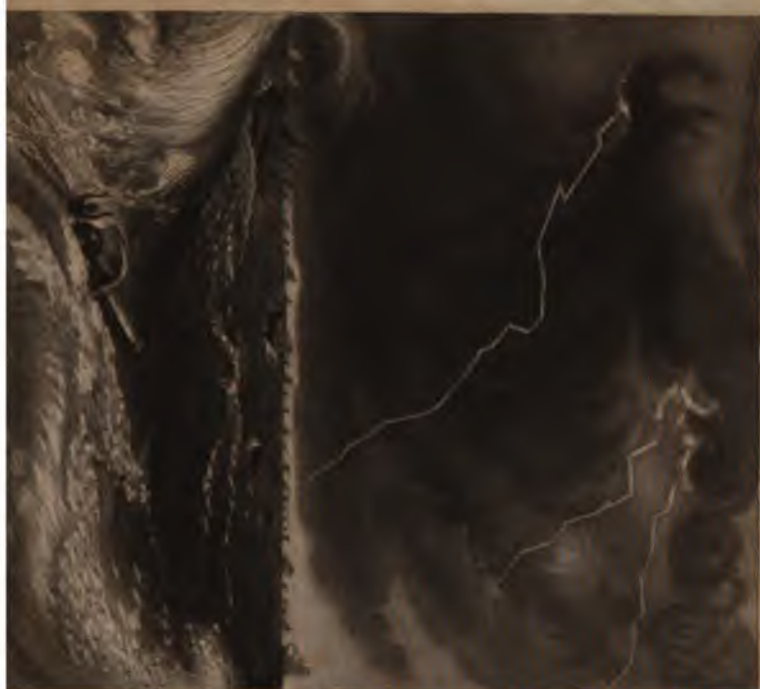
* Dr. T. Chalmers' Works, Vol. VII., p. 234, etc.

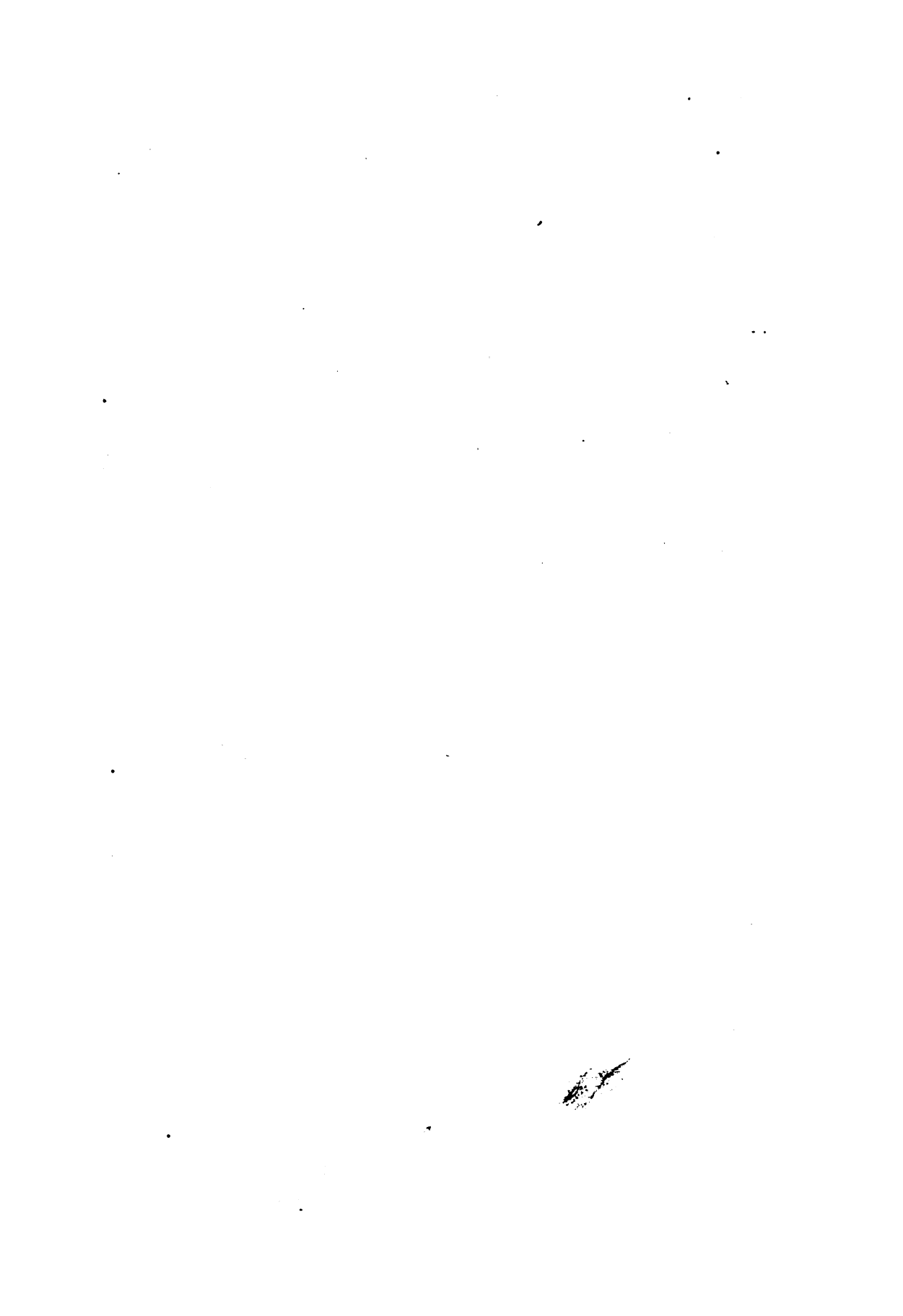
As upon the safety of the acorn sprout depends the growth and strength and value of the future oak, so upon the early safety of the little Plymouth Colony depended the springing up of the great Tree of American Liberty; and, we may say, the existence of the vast and happy nation which spans this continent to-day. And we may reasonably suppose that if the great God interests Himself in any of the affairs of this world, He has been interested in the formation, character, and destiny of such a nation as this. Now in an early day, the spring of 1623, our Pilgrim Fathers, finding that supplies from the old country could no longer be depended upon, set themselves to plant more corn than they had ever done before; but by the time they had done planting, their stock of food was spent. They daily prayed, "Give us this day our daily bread," and in one way or another their wants continued to be supplied. In the month of June, their hopes of a harvest were nearly blasted by a drought, which withered up the corn, and made the grass look like hay. All expected to perish with hunger. In their distress, these godly people set apart a day for humiliation and prayer, and continued their worship for eight or nine hours. "God," says the historian, "heard their prayers, and answered them in a way which excited universal admiration." Although the morning of that day was clear, and the weather very hot and dry during the whole forenoon, yet presently clouds were seen to form and extend in every direction, and before night it began to rain, and refreshing showers continued to fall for many days, so that the

ground became thoroughly soaked, and the drooping corn revived.

At a later date in our history, 1746, the French fitted out a powerful armament for the destruction of New England. This fleet consisted of forty ships of war, and to all human judgment seemed a sufficient force to render that destruction certain. It was put under the command of the resolute and experienced Duke d'Anville, and set sail on its terrible errand from Chebucto in Nova Scotia. In the meantime, our pious forefathers, apprised of their danger, and feeling that their only safety was in God, appointed a season of fasting and prayer to be observed in all their churches. While the Rev. Mr. Prince was officiating in "Old South Church," on this fast-day, and praying most fervently to God, to avert the dreaded calamity, the wind suddenly rose (the day had till now been perfectly clear and calm), and became so powerful as to rattle violently all the windows in the building. The man of God, startled, for a moment paused in this prayer, and cast a look round upon the congregation; he then resumed his supplication, and besought Almighty God to cause *that wind* to frustrate the object of their enemies, and save the country from conquest and Popery. The wind increased into a tempest, and that very night the greater part of the French fleet was wrecked on the coast of Nova Scotia. The Duke d'Anville, the principal General, and the second in command, both committed suicide. Many died with disease, and thousands were consigned to a watery grave. The small number that remained alive returned to France, without health and







without spirits. And the enterprise was abandoned, and never again resumed.

The learned and philosophical Dr. Dwight, President of Yale College, referring to the foregoing and similar events in the early history of this country, says : " I am bound, as an inhabitant of New England, solemnly to declare, that, were there no other instances to be found in any other country, the blessings communicated to this would furnish ample satisfaction that God answers prayer, to every sober, much more to every pious man. Among these, the destruction of the French armament under the Duke d'Anville ought to be remembered with gratitude, and admiration, by every inhabitant of this country. Impious men, who regard not the work of the Lord, nor the operation of his hands, may refuse to give God the glory of his most merciful interposition. But our Ancestors had, and it is to be hoped their descendants ever will have, both piety and good sense, sufficient to ascribe to JEHOVAH the greatness and the power, and the victory and the majesty ; and to bless the Lord God of Israel for ever and ever." *

The eventful history of the Scotch Covenanters present many striking instances of what we believe were direct answers to prayers. Alexander Peden, with some others, having been pursued for a long distance, on ascending a hill, found themselves so exhausted that they could go no farther, when Peden said, " Let us pray here, for if the Lord doth not save us, we are all

* *System of Theology*, Vol. IV., p. 127.

dead men." He then fell upon his knees and prayed, saying, "O Lord, this is the hour and power of thine enemies: send them after those to whom thou hast given strength to flee, for our strength is gone. Twine them about the hill, O Lord, and cast the lap of thy cloak over thy poor servants, and save us at this time, and we will keep it in remembrance, and tell to the commendation of thy goodness, thy pity and compassion, what thou didst for us at such a time." And in this he was heard, says the historian, for a cloud of mist immediately intervened between them and their persecutors; and ere it cleared away the pursuers received orders from head-quarters to go in pursuit of others.

In the reign of Queen Elizabeth, England reached a crisis, the most momentous doubtless in the history of that country. Roman Catholic Europe and Reformed Europe were struggling for death or life. The English Government was at the head of the Protestant interest; at the head of the opposite party was the mightiest prince of the age, a prince who ruled over Spain, Portugal, Italy, the Netherlands, the East and West Indies, of whom the leading powers of the day stood in respectful awe. This prince, Philip II. of Spain, a morose and cruel bigot, urged and supported by the Pope of Rome, determined upon the invasion and conquest of England, and devoted the wealth of the Indies to the building of ships, raising armies and purchasing stores for that purpose. While all this was going on, England was not idle, but made all possible preparation to meet and repel the Invader. The Protestants of all Europe regarded

with intense interest the approaching contest, which would decide, not only the liberties and religion of England, but the fate of their own religion also. Prayers, therefore, from the first, were offered to God without ceasing in the churches and families and closets of the Protestants for the safety of England and the defeat of the enemy. "The Puritans, even in the depths of the prisons to which the Queen had sent them, prayed, and with no simulated fervor, that she might be kept from the danger of the assassin, that rebellion might be put down under her feet, and that her arms might be victorious by sea and land."* And these fervent prayers, as the issue proved, were not offered in vain. At length, the fleet of Philip, *The Invincible Armada*, as it was proudly styled, sailed forth from the Tagus. It proceeded up the English Channel in the form of a crescent, of which the horns were seven miles asunder. The motion of this fleet, the greatest that had ever ploughed the ocean, was slow though every sail was spread; "the winds," says Camden, the chronicler of the times, "being as it were tired with carrying them, and the ocean groaning under their weight." It was a force indeed that might well have struck terror into the heart of any people; but the English had committed their cause to God. And behold now the result—not an individual of the mighty armament was permitted to set foot on British soil. Foiled plans, daring assaults, and destructive storms overtook them in quick succession; and disaster followed

* Macaulay's *History of England*, Vol. I., p. 48.

disaster, until there remained of this vast and vaunting force but an insignificant and shattered remnant to return to Spain to tell the tale. So complete was the defeat on the one side, and so happy was the deliverance on the other, that the result was marvellous alike in the eyes of friends and foes. *They cried unto the Lord in their trouble, and he saved them out of their distresses.* Whatever the sceptics of this day, standing in safety and at a distance, may say to this, all those engaged in the fearful struggle devoutly acknowledged the Hand of God in the issue—and significant and impressive are the memorable words in which they did so—

The people—*Invincible to man, but destroyed by the Lord.*

The Queen—*God breathed, and they were dispersed.*

King Philip—*I bow to the decrees of Heaven.*

Exactly one hundred years after the above event, the liberties and religion of England were again in jeopardy, when King James II. covertly attempted the subversion of the Government and the re-establishment of Catholicism. Discovering his aims, and that he was about to carry them, great was the consternation of the Protestants. Conscious of the King's power, and of their own danger, "divers lords spiritual and temporal" united in a request to Prince William of Orange to come over from Holland to help them. This prince, thoroughly in sympathy with their cause, acceded and at once set himself to raise an army, and collect a fleet for their transportation. At length the time set for embarkation arrived; but the wind continued contrary. A solemn fast was observed, and public prayers to Heaven were offered for

the safety and success of an expedition that went forth to secure ends so important. The "Protestant wind," as it was called, came, and the expedition sailed from Helvoetsluys.* The weather at every turn proved most favorable; the wind that blew briskly from the east detained the King's vessels of war helplessly in the Thames, while it carried the fleet of the prince prosperously down the channel—it turned to the south when he wished to enter Torbay—it sank to a calm during the disembarkation—and as soon as the disembarkation was completed, it rose to a storm, and met the pursuers in the face. So remarkable was all this—so timely and favorable was each particular change—that pious men naturally regarded it as nothing less than the interposition of God in answer to their prayers.†

But we need not further multiply instances of this kind.—Now, those immediately concerned and most deeply interested in all the foregoing events, as we have seen, devoutly recognized the Hand of God in them. The godly men of Plymouth Colony believed that the timely rain which saved at once their crops and their lives was sent in answer to their prayers. The good people of New England believed that the storm which delivered them from the violence and oppression of the French was raised by God in answer to their united cries, and *that* while they were yet speaking. The panting Covenanters believed that in the advancing cloud of mist they saw the very hand of God drawing as a curtain

* Keightley's *History of England*, Vol. II., p. 382.

† Macaulay's *History of England*, Vol. II., p. 378.

his skirts round about them. Queen Elizabeth and the godly among her people believed that in answer to their earnest supplications the Almighty breathed upon and dispersed the great Armada. The pious Protestants, in the reign of James, who had besought the Lord with tears for their beloved country, believed their prayers were answered in the favoring winds that brought the Deliverer to their shores. All these prayed, all believed their prayers were answered. And what reason have *we*, of the present day, to doubt this? What light do we possess that warrants us to say that they were mistaken? What is there among all the developments of modern science that justifies us in the assertion, that such prayers were not and could not have been answered? Not anything. There is nothing in the constitution of the universe, nothing in the operation of physical Laws, as understood to-day, to forbid implicit belief that these several deliverances might have come in answer direct to the prayers of faith. God might have sent the timely rain, the destructive storm, the sheltering mist and the favoring winds, at his people's cry—not by suspending or perverting the usual operations of physical forces, or by reversing any of the established successions that are known to take place in the ever-restless, ever-heaving atmosphere—but by so adjusting or balancing the forces of nature as that in their wonted mode and order of operation they produced those precise results at the needed time; which adjustment or balancing might have been effected by Him, from whom all force emanates, as by a breath, among the deep workings of materialism, far beyond the search or science of man.

All power resides in God; from Him proceed all the energies manifested in the material creation; and at a point so near the Divine Source as to be unapproachable to human philosophy, each energy or force may receive from the Divine Will such an impression as that their combined influence shall result at any time, or in any place, in a direct and complete answer to the prayer of faith. While all things that lie within the sphere of human test or observation may proceed according to their established order, yet an unseen influence behind, and far behind the utmost limit of man's research or discovery, may have decided their mutual bearings, and so, the final result in which they shall issue—and that unseen influence may have been put forth at the importunity of *prayer*—the power that moves Him who moves the universe; and who, without violence to the known regularities of nature, can send rain or sunshine, pestilence or salubrity, foster or destroy the hopes of the husbandman, and rouse or assuage the storm for or against the mariner, at His pleasure. Such is the teaching of the New Testament, such is the comforting persuasion of Christian Faith, and all the new light of this nineteenth century has revealed nothing to invalidate it.

PRAYER FOR THE SICK.

AMONG the favors for which the New Testament Scriptures specifically warrant and encourage us to pray is the recovery or relief of the sick. "Is any among you afflicted? let him pray," says the Apostle James. And again, "Is any sick among you? let him call for the

elders of the church, and let them pray for him, and the prayer of faith shall save the sick, and the Lord shall raise him up." Prayer is *ever* alike our duty and our privilege; but there is no place where it is more appropriate or needful, than by the bed-side of the sick. When health has fled—when strength has failed—when vain has become the help of man—when death approaches—to whom can we look for succor but to Almighty God? Nature itself, in such circumstances, both teaches and prompts us to call upon Him. And the prayers then offered have brought relief and inspired hope a thousand and a thousand times when every earthly source had failed. There is, indeed, real and availing comfort to the helpless sufferer in pouring his complaints into the ear of the Father of mercies. The last resource, the last hope of afflicted millions, would be taken away, if men were denied access to the throne of grace. And yet, heartless and unnatural as it is, the attempt is made by materialists to strike even this last plank from under the sinking sufferer. They would sever the connection of the human spirit with its God, and leave it a helpless, bewildered and cheerless wanderer amid the workings of cold and inexorable laws, with no Comforter in the time of trouble, no Helper to whom the fainting heart can turn, no Hope to which the sinking soul can cling.

Among the devotees of science, in the present day, is a class, to whom the Deity has become nothing more, nothing else than the play of a set of blind unconscious forces. These, as mere physicists, holding that all the

chemical processes and all the physical Laws of our being infallibly and inflexibly work out their results, engage to assure us that prayer for the sick, therefore, can change nothing, can effect nothing either to mitigate the severity or to arrest the progress of disease. In short, they plainly tell us that all such prayers are useless, and therefore thrown upon the air. Thus Mr. Tyndall, speaking of Cholera cases, says: "To alter by prayer the consequences of this, or any similar fact—to deprive by petition a single molecule of miasmatic matter of its properties—would, in the eye of science, be as much a miracle as to make the sun and moon stand still. For one of these results neither of us would pray; on the same grounds I refuse to pray for either."*

Another individual of this sceptic school, evidently with more assumption than devotion, proposes an actual experiment on the Throne of Grace, to test the value of prayer for the sick. "I ask," he says, "that one single ward of a hospital under the care of first-rate physicians and surgeons, containing certain numbers of patients afflicted with those diseases which have been best studied, and of which the mortality rates are best known, whether the diseases are those treated by medical or by surgical remedies, should be, during a period of not less, say, than three or five years, made the object of special prayer by the whole body of the faithful, and that, at the end of that time, the mortality rates should be compared with the past rates, and also with that of other

* *Pall Mall Gazette*, October 19, 1865.

leading hospitals similarly well managed, during the same period. Granting that time is given and numbers are sufficiently large, so as to ensure a minimum of error from accidental disturbing causes, the experiment will be exhaustive and complete.—I might have proposed to treat two sides of the same hospital, managed by the same men; one side to be the object of special prayer, the other to be exempted from all prayer. It would have been the most rigidly logical and philosophical method. But I shrink from depriving any from—I had almost said—his natural inheritance in the prayers of Christendom. Practically, too, it would have been impossible; the unprayed-for ward would have attracted the prayers of believers as surely as the lofty tower attracts the electric fluid. The experiment would be frustrated. But the opposite character of my proposal will commend it to those who are naturally the most interested in its success; those, namely, who conscientiously and devoutly believe in the efficiency against disease and death of special prayer. I open a field for the exercise of their devotion. I offer an occasion of demonstrating to the faithless an imperishable record of the real power of prayer.”*

This proposal, throughout, indicates in its author an utter misconception of both the nature and conditions of true prayer; and Christian people cannot become parties to such a scheme without renouncing the fundamental principles of their religion, and thus render every

* *Contemp. Review*, July, 1872.

prayer which they may offer utterly worthless. Against this scheme of Test there lie the following fatal objections :

(1.) Such a Test is *not authorized, not acceded to, by the first and highest Party concerned, and is therefore vain.* To be of any value or avail, it should have the approval of God ; nay, should have proceeded from God, as in the contest of Elijah with the priests of Baal. It is not for man thus to propose terms or tests to his Maker. Without the Divine sanction no human being has a right either to make or to accept such a proposition.

(2.) This experiment is *in contradiction to the very spirit of prayer* ; for, to carry it out, requires the violation of a Christian principle, and the neglect of a commanded duty. Love, sympathy and prayer for *all men* is an essential element of Christian character. Prayer, therefore, from a heart that wilfully *limits* its sympathies, as here proposed, is, by the act, worthless. No man of godliness could designedly, as this scheme requires, confine his sympathies and prayers for a day, much less "from three to five years," to the inmates of a single ward, or a single hospital, to the exclusion and neglect of all others. To do so would at once disqualify him to offer any acceptable prayer.

(3.) In the word of God, answer is promised only to sincere and singleminded prayer ; but this proposal necessarily involves *insincerity and doublemindedness* ; since what is nominally asked, namely the recovery of the patients, is not the real and ultimate object, but the proving of their influence with God through prayer.

(4.) The experiment is *impracticable*. "The whole body of the faithful" can never be brought to agree in such a thing. The wards and hospitals excluded and neglected—and it is proposed to exclude and neglect all save one—would for that very reason (as the writer seems to apprehend) all the more engage the sympathies and prayers of all true believers, "as surely as the lofty tower attracts the electric fluid."

(5.) This proposed Test is *arrogant and impious*, as it would take judgment and decision out of the hands of the Supreme. In answering prayer God exercises sovereign wisdom, which weighs all the relations to himself of both the suppliant and the object of his prayer, as well as the interests of all concerned—a sovereignty not to be interfered with by any proposal from man—*though made by a member of the Athenæum Club!*

(6.) The selected Ward or Hospital having been prayed for through the specified term, it is proposed to compare its rates of recoveries and deaths with those of a former period of the same length: but this would be to compare them with the rates of a period that had been prayed for in precisely the same way; for there never was a time when "the body of the faithful" did not pray for all that were sick and afflicted. So that this great Test, proposed with such pomp of diction and array of scientific technicalities, after all, amounts only to the very simple thing of *comparing like with like*, whereby nothing is gained.

When the unbelievers of our Saviour's time required of Him a sign, He told them that they had evidence

enough already, and declared that if they believed not Moses and the prophets, neither would they believe though one rose from the dead—a declaration that was fully verified when a short time after He rose Himself from the dead, and those Jews continued as incredulous as ever. The same, there is room to apprehend, would hold true of those who desire this test, even were they to see every patient in a hospital rise together, take up their beds, and walk away to their homes—they would ascribe the event to any influence rather than to that of prayer.

The materialist would have us establish a truth or a duty of religion, after the same manner that he does a fact in nature. But the demand is unreasonable—indeed, absurd. Moral evidence and material evidence differ in their very nature, yet the former may constitute a proof as conclusive as the latter. And the Christian has as unquestionable proof that God answers prayer, as the physicist has that cold condenses atmospheric moisture into a shower, or that heat evaporates that shower again from the ground. We maintain, and shall now undertake to demonstrate that—

Prayer may secure to the Sick physical benefits of the most important nature, and that without miracle, and without infringement of any natural Law.

We might argue this from general principles. It is said, and rightly, that the voice of nature is the voice of God—it proclaims what God has done, and what He has ordained. Now prayer is the voice of nature, is the instinctive cry of creature weakness and dependence.

In pressing need, in imminent danger, or helpless suffering, the deepest and the strongest feelings of the human heart prompt to prayer. When earthly comforts flee, when help from man fails, when hope from the world is vanishing, the mind of its own promptings rises above every creature relation, and goes out beyond all that is visible, for the succor which it needs; in such circumstances, the innate religious sentiment of the soul is aroused, and addresses itself to God, and looks to Him alone for relief. This feeling is universal, is a general *fact* of nature, as clearly recognizable as the action of heat, or the force of gravitation. In every region of the globe, where the Bible is and where it is not, man's heart in one way or another cries out for the living God. What has been thus deeply and universally implanted by the Creator in the heart of man must be in harmony with His arrangements of the world around him, and with the principles of His government over him; for there are no jars, no gaps, no disconnected parts, in His works. Inborn religious sentiment, prompting to prayer, is an element of human nature, is an actual fact in the universe, and must be interpreted in harmony with the Laws of the universe. If God has so constituted His creature man, that he naturally and instinctively turns to Him in his extremities, we may be sure that a due provision has been made whereby his prayers may be answered, unless we believe that this religious instinct has been given to deceive and delude him—given to excite hopes that must be forever disappointed. God had never planted the *ear* had He not also provided

means for the transmission of sound; and He had never formed the *eye*, had He not likewise created light to illumine it. So our all-wise and loving Father in heaven would never have implanted these promptings to prayer in the human breast, had He not also intended to answer those prayers as might be wisest and best for them. To imbue man with a religious sentiment that quickens him to cry unto God, and then place him in a world under the control of a set of inflexible forces, that admit not of an answer to those cries, would be as though the Creator had implanted in the newborn infant the strong and craving instinct, which leads it to seek and to draw the mother's breast, while He had so formed that breast that not a drop of milk could ever flow into it or out of it. Thus nature itself, we believe, teaches us plainly that our Father in heaven would never have implanted in the hearts of His earthly offspring this instinctive propensity to call upon Him in time of trouble or need, had He so tied His own hands by a system of physical Laws that He could not respond to such cries, and administer relief when wise to do so.

We advance now to proof more direct of "the physical benefits of prayer for the sick," and our argument shall take the form of the following distinct propositions:

1. (a) *In prescribing for the sick, it is of vital importance to choose the best remedy; (b) In answer to prayer the physician's mind may be guided to that remedy; (c) Therefore prayer may prove the means of great physical benefit to the sufferer.*—This conclusion is to be accepted, or the premises must be disproved.

(a) As to the first premise, that it is important to choose the best remedy, no one will doubt it; no proof, therefore, of this is necessary.

(b) And as to the second, that in answer to prayer the physician may be guided in his selection of medicine, no one that believes in the infinite power and wisdom of God will deny that He *can* do this; to impart such guidance either by quickening the memory, or by inclining the will, or by direct suggestion, presents no difficulty to the all-comprehending and all-pervading Spirit, who has free access to all the avenues of the soul. And this He may do while the individual is wholly unconscious of the slightest interference with his mental operations; for a thousand ideas arise in his mind, of the origin of which he can give no account.—Nor can any man, with the shadow of reason, say that God does *not* do this. Neither Mr. Tyndall, nor the whole school of scientists to which he belongs, can produce from any province of physical nature a single item of evidence that He does not thus often guide the minds of men; and that for the simple reason that material nature has nothing to say on the subject, that it is utterly silent as to spiritual influences or communications.

But while nothing can be urged against this point, we have in its favor the plain and positive testimony of Scripture: "If any man lack wisdom, let him ask of God, that giveth to all men liberally and upbraideth not, and it shall be given him:" again, "The meek will He guide in judgment, and the meek will He teach His way." We have in the same Word also numerous

examples of such communications of wisdom or guidance. And all these together constitute what is to the Christian a satisfactory and conclusive evidence.

(c) As, then, the use of the best remedy is important to the patient's recovery, and the mind of the physician in answer to prayer may be guided to that remedy, it follows that we are warranted to believe that Prayer for the Sick may thus prove to him the means of great physical good.

2. (a) *A trusting, calm, and hopeful frame of mind in a patient is always eminently helpful to his recovery;* (b) *In answer to prayer the Holy Spirit may produce in him this favorable frame;* (c) *Therefore prayer may prove to him the means of great physical benefit, namely his restoration to health.*

(a) A trusting, calm, and hopeful frame of mind is always eminently conducive to recovery from sickness. The proof of this can readily be adduced from our standard medical authorities, among whom there is no diversity of opinion on the point. Few things, if any, are more detrimental to a patient, whatever his disease may be, than anxiety, fear, and despondency; the medicine that will cure in such a case must possess virtue all but miraculous. And few remedies, if any, will contribute more efficiently to the restoration of health than a cheerful and hopeful mind; and that medicine must be even pernicious which does not speedily work wonders, if taken with a full persuasion and expectation of rapid benefit.

"The mind acts as clearly and distinctly on the body as either chemical, mechanical, or vital agency."

Power of the Soul over the Body, by Dr. George Moore, M. R. C. P., p. 164.

"Our passions are the grand conservators as well as disturbers of the healthy action of our bodies; and they exercise so direct an influence over the functions of life as to be properly classified with medical agents. Indeed, they often act with no less power than the most heroic medicines, and are as rapid, and sometimes as fatal in their operation, as Prussic acid, or any other deadly poison." *Ib.*, p. 224.

"The mind acts on the ultimate vessels in which the changes of the blood are effected. Who has not felt the flash of thought suffusing the cheek, quickening the heart and kindling the eye? We all acknowledge by the blushes of love and pride and shame, or by the cold and pallor of our fears, that the affections of the mind possess dominion in the citadel of life, and permanently influence the whole economy of our bodies." *Health, Disease and Remedy*, p. 137.

"The fibrillæ, or terminal fibres of the nerves, are involved among the minute blood-vessels, and it is the office of the nerve-power to influence life and chemical action in those vessels; and here it is that life, mind and chemistry, meet together, so that every change in the state of the feelings produces a corresponding change in the blood, and every change of the blood influences the mind. Thus we find that the action of medicine is vastly modified by the state of the mind, and by the habitual activity of the brain, which in some measure accounts for the anomalies so often witnessed in the

practice of physic, medicines in opposite states of feeling producing contrary effects on function." *Ib.*, p. 138.

"We meet with many instructive instances, proving that mental influence may often be made available in the cure of disease." See *Brit. & For. Med. Review*, 1847.

"Not a thought, not an idea, not an affection or feeling of the mind can be excited without positive change in the brain and in the secretions; for every variation in the state of the whole, or any portion, of the nervous system, is of course accompanied by a correspondent change in those organs and functions which it furnishes with energy." Dr. G. Moore's *Power of the Soul over the Body*, p. 163.

"The state of the blood, on which health mainly depends, is influenced almost as much by our feelings as by our food." *Ib.*, 234.

"Very many diseases have a mental origin; and perhaps there is no cause of corporeal disease more clearly made out, or more certainly effective, than protracted anxiety and distress of mind.—Our passions and emotions also, nay, even some of our better impulses, when strained or perverted, tend to our physical destruction." *Watson's Lectures on the Principles and Practice of Physic*, p. 59.

"Fear and anxiety diminish the action of the lungs, impede the changes among the ultimate molecules of our bodies, interrupt all the secretions except that of water, and produce a cold, harsh, and pallid state of the skin. The genial passions, however, operate in a manner quite the reverse, and a man whose affections are in a pros-

perous condition, has rarely occasion to complain of functional inactivity. But all our emotions are capable of destroying life if carried to excess, and therefore they all, more or less, interfere with the proper action of that centre of sympathy, the stomach, by accumulating irritability in the brain, while diminishing the energy of that nerve-action by which organic functions are carried on." *Health, Disease and Remedy*, by George Moore, M.D., M. R. C. P., p. 136.

"Next to the brain the stomach suffers from continued mental distress. The appetite fails; digestion is suspended; atrophy succeeds, and perhaps some nerve-ache racks the sufferer. Sometimes pulmonary consumption, or disease of the heart, the liver, or the bowels, is induced. The secretions are, of course, proportionally affected. Thus the milk of a nurse is often entirely suppressed by mental disquietude. Hence a nervous, excitable woman is hardly fit to suckle her own children; for the fluid that should nourish her infant undergoes so many changes, from the mother's mental variations, as greatly to distress the child, and perhaps even to destroy it. Ninety-eight out of a hundred deaths from convulsions are of children, thus proving them to be especially liable to this disorder; and as the majority die in early infancy, it is not unlikely that the state of the mother's mind may be the secret cause of this unnatural mortality." *Power of the Soul over the Body*, pp. 237, 238.

"A soul that condemns its own conduct is sure to produce disorders of the nervous system, and hence also

of the blood in all its vital operations.—There is but one cause of misery, disease, and death to man. Let us shun that, and we need not be very nice about the choice of our diet, or our doctor, for, after all, the grand secret of health is to be happy at heart.—The rules of the New Testament are promotive of bodily health, as well as health of soul, and they are really sufficient in most cases for the direction of appetite in the use of means, and in them we learn *why* we should be temperate, active, holy." *Health, Disease and Remedy*, p. 140.

"The love of God," says the celebrated Dr. G. Cheyne, "as it is the sovereign remedy of all misery, so, in particular, it effectually prevents all the bodily disorders the passions introduce, by keeping the passions themselves within due bounds; and by the unspeakable joy and perfect calm, serenity, and tranquillity it gives the mind, becomes the most powerful of all the means of health and long life."

The foregoing authorities fully prove, and abundantly illustrate, the truth of the major premise in our argument, namely, that a trusting, calm, and hopeful frame of mind is always eminently helpful to recovery from disease.

(b) And now for the second, that in answer to prayer the Holy Spirit may produce in the patient this favorable state of mind. To this the materialist has nothing to oppose; neither from the subjects of his experiments, nor from the whole field of his observation, can he adduce anything that will serve him to weaken the statement by the shadow of a doubt; for, as stated in

the first proposition, material nature has nothing to say for or against Divine Spiritual influences. This is a matter purely of Revelation and personal experience. In the New Testament we are plainly taught, and assured in every variety of terms, that the Holy Spirit is freely given to them that ask—given unconditionally, given always, and to all, in answer to believing prayer. And we are also told that “the fruit of the Spirit is love, joy, peace, longsuffering, gentleness, goodness, faith, meekness, temperance”—which are the precise elements of mind that the experienced and skilful physician would desire to find in his patient. Yes, they who with humility and faith seek the Lord, find rest from their burden of anxiety and fear, find peace which the world cannot give, and attain to a hope that is both sure and steadfast—constituting altogether the very condition of soul which Dr. Cheyne declares to be “the most powerful of all the means of health.” And to the truth of these promises, and the reality of these influences of the Spirit, the believers of all ages past have borne steadfast and unvaried witness. And thousands and tens of thousands to-day, in every Christian land, stand ready to attest the truth and reality of the same from their personal experience, from the deep and happy consciousness of their own souls. So that, if any kind of Scripture testimony, or any amount of historic evidence, or any number of living witnesses, or all of these together, can establish any fact, then the truth of our second premise is clearly and conclusively demonstrated, to wit, that the Holy Spirit in answer to prayer may produce

in the patient a trusting, calm, and hopeful frame of mind.

(c) Since, as has now been proven, a trusting, calm, and hopeful state of mind is eminently helpful to recovery from sickness; and since the Holy Spirit in answer to prayer may beget that happy frame; therefore prayer may be the means of great "physical benefit" to the sick in his restoration to health.

3. (a) *Resignation ever lightens and relieves the burden of the Sufferer*; (b) *Prayer to God begets a spirit of resignation*; (c) *Therefore prayer to God may prove the means of "physical benefit," physical relief, to the sick.*

(a) As impatience, fretfulness, or a rebellious spirit, must excite, inflame, or exasperate every malady, and thus realizes to the Sufferer the evil symbolized by the refractory ox kicking against the goad—to wit, the aggravation of his own misery; so Christian resignation fails not to soothe the frame and tranquillize the spirit of the afflicted, whatever his trial may be. The resigned soul recognizes the hand of God in his suffering, and believes it to be sent upon him in *wisdom* and in *love*—believes that all things work together for good to them that love God. "Good," he says,

"Good, when He gives, supremely good!
Nor less, when He denies;
Even crosses from His sovereign hand
Are blessings in disguise."—HERVEY.

When the Sufferer can view the dealings of God with him in this light, and from the depths of his soul add, "*Thy will be done,*" oh, this takes from the burden its

galling weight, from grief its chief poignancy, and from suffering its sharpest edge. And in this way Christian resignation helps, as nothing else can help, the patient to bear his burden of affliction.

(b) Prayer to God begets this spirit of resignation. This is not a product of the natural heart, but is a fruit of the Holy Spirit, and given only in answer to prayer. A man may work himself into a spirit of stoicism, or hardihood; but the Holy Spirit only produces this calm and trustful yielding of ourselves to the disposal of God, which alone soothes and tranquillizes the soul in deep affliction.

(c) Since, then, resignation ever lightens and relieves the burden of the Sufferer, and prayer to God begets this spirit, it follows that prayer may thus prove the means of great physical benefit to the sick. "Medical practitioners," says Dr. Moore, "can bear ample testimony to the fact, that religious feeling, that is, calm resignation to the Supreme Will, soothes and tranquillizes the sufferer's frame more than all medical appliances."

4. (a) *Faith in Christ enables the sick to rise superior to all the fears and sufferings of dissolution, and to triumph even over death*; (b) *This Faith is to be attained through Prayer in His name*; (c) *Therefore prayer may prove the means of inestimable benefit in our final physical struggle.*

(a) Death is a solemn and important event in man's history. It is the moment of destiny—the seal of eternity—the cessation of probation—the commencement of retribution. The antecedents are awful—so are the accompaniments—so are the consequents. To every

sense it is appalling—to every social affliction crucifying—to reason perplexing—to everything but FAITH overwhelming. This and this only can change its aspect, extract its sting, or soften its stroke; and this *can*. Yes, Christian Faith can give the soul a joyful and illustrious triumph over death.

Faith in the "Blood of Atonement" brings home to the soul a sense of pardon, and an experience of peace with God. Faith discovers to the Christian that death to him has lost its sting, and the grave been despoiled of its boasted victory. Faith brings assurance that our Father in heaven concerns Himself to determine the time and place, the means and the manner of death to every believer; and the thought that infinite wisdom and infinite love have been engaged in arranging all these, is full of precious and unspeakable comfort. Faith holds sweet and hallowed communion with a living present Saviour, and reveals amid celestial splendors the bright and holy mansions he has made ready for his ransomed people. And Faith brings down cherub guards from glory to conduct to those mansions in joyous triumph the soul when liberated from the earthly house of this tabernacle.

What scenes, transcending all that poetry can describe or fiction can imagine, are to be witnessed in the chambers of dying saints! How often has it seemed as if the veil were drawn aside, and the scenes of the celestial world were actually visible to the eye of sense—faith, being in more lively exercise than e'er before, piercing through the veil of mortality, and roaming abroad amidst

the realms of celestial glory. Hence it is that we so often hear that triumphant exclamation—*O death, where is thy sting? O grave, where is thy victory?*

Great is the power of Christian Faith. Through faith, persons at all periods of life, of every variety of bodily constitution, male and female, have nobly risen above the fear and above the pain of every kind of disease and every degree of violence, and calmly conquered, yea, even exulted, over the last enemy. A member of the Royal College of Surgeons gives this touching description of a youth who lately adorned the drawing-room and had borne the palm of academic strife: “While in the bloom and brilliancy of body and mind, when most sensitive and alive to all the passionate and beautiful associations of affection and of intellect, the spoiler (consumption) stealthily crept in; but previously a light from heaven had entered his heart, and therefore, while the malady was building up the barrier between time and his spirit, the patient relied upon the Hand that chastened him; he felt that pain, and weakness, and weariness, and disappointment, and death are not fortuitous occurrences, but the process by which the wisdom of God effects the weaning and separation of the believing soul from sin, sorrow, and distracting attachments, to fill it forever with intelligence, peace and perfection. Hence, with becoming composure, he submitted to the purifying trial of his faith, and said, while his features reflected the Divine Love which he contemplated—*Even so, Father, for so it seemeth good in thy sight.* No fever of the mind added to the hectic which consumed his body, and the

disease was not only borne, but really much retarded and ameliorated by the strong consolations of a Christian faith."

A minister of Christ, having been sent for to visit a Western cabin, found in it a father and his dying daughter, surrounded by evidences of intelligence and refinement. They were of Quaker associations. He asked the daughter if she knew her situation. "I know that my Redeemer liveth," said she in a voice of subdued and heavenly sweetness. A half-hour passed, and she spoke in the same melodious tone, "Father, I am cold." And the old man reclined by his dying child, endeavoring to restore warmth to her stiffening limbs; and she twined her emaciated arms around his neck, and murmured in a subdued voice, "Dear Father, dear Father!"—"My child," said the old man, "doth the flood seem deep to thee?"—"Nay, father, for my soul is strong."—"Seest thou the thither shore?"—"I see it, father; and its banks are green with immortal verdure."—"Hearest thou the voices of its inhabitants?"—"I hear them, father, as the voices of angels falling from afar in the still and solemn night time; and they call me. *Her* voice, too, father: Oh! I heard it then."—"Doth she speak to thee?"—"She speaketh in tones most heavenly."—"Doth she smile?"—"An angel smile; a calm and holy smile. But I am cold, cold, cold! Father, there's a mist in the room. You'll be lonely, lonely. Is this death, father?"—"It is death, Mary."—"Thank God!" And as these sweet words died away upon her lips, her tranquil spirit returned to Him who gave it.

"And is this death?—Dread thing!—
If such thy visiting,
How beautiful thou art!"

Schiller, when dying, was asked how he felt—"Calmer and calmer," was his reply. And the Rev. Charles Sim-eon when his soul was about departing said, "There is now nothing but *peace, sweetest peace*." And Dr. Edward Payson when near his end, and apparently racked with pain, was asked if he felt reconciled—"Reconciled!" he responded—"oh, that is too cold; I rejoice, I triumph! I can find no words to express my happiness. I seem to be swimming in a river of pleasure, which is carrying me on to the Great Fountain."

"Is that a *death-bed* where the Christian lies?
Yes, but not *his*; 'tis Death itself there dies."

The history of martyrdom records victories of faith more illustrious still, if possible. John Noyes, when brought to the stake, kissed it, and said, "Blessed be the time that ever I was born for this day!"—Mr. Hawkes, being asked by his friends to give them some token that the fire was not so intolerable but that a man might keep his mind quiet and patient, promised to give them such a token—he would lift his hands above his head before he died. An eye-witness states that at the stake he mildly addressed himself to the flames, and when his speech was taken away, and his skin drawn together, and his fingers consumed so that all thought him dead, he, in remembrance of his promise, suddenly lifted up his blackened and burning hands, and clapped them together three times, as if in great joy.—James Bainham, also,

having half his arms and legs consumed, spake these words: "Ye look for miracles! Here, now, ye may see one. *This fire is a bed of roses to me.*"

These instances, and a thousand others similar to them that might be adduced, sufficiently prove that Christian Faith has power to raise the sick and tortured superior to all fears and to all pains, and to enable them to triumph nobly even over death itself.

(b) Now this "Faith is the gift of God," and is to be attained by prayer. It has its degrees, differing in its strength in different individuals, and admitting of increase in all. The means of its growth are the enlightening of the mind into a stronger conviction of the truth of the Gospel, and the disposing of the heart into a more cordial and loving acquiescence in it. This is effected through Divine influence, it being the office-work of the Holy Spirit. Hence the duty and necessity of constant prayer to God in the language of the afflicted parent, "Lord, I believe, help thou my unbelief," and of the astonished disciples saying, "Lord, increase our faith." In answer to such petitions the Holy Spirit builds up the Christian in this most holy and precious faith, until he "abounds in hope," and is "filled with joy and peace in believing." While it is true that in order to this the Patient's own prayers are indispensable, yet the prayers of others with him and for him may be of essential aid and benefit to him. Many times the sick is little capable of praying himself, and it is to him a privilege and a help to have a fellow-Christian lead his thoughts in devotion. Besides, the prayer of a good man may avail

much to strengthen his faith and to cheer his heart. Faith is "a fruit of the Spirit," and the Spirit is promised and given in answer to prayer.

(c) Since, then, as has now been shown, *Faith in Christ* enables the sick to rise superior to all the fears and sufferings of dissolution, and to triumph even over death; and since this *Faith* is to be attained through prayer; it follows, therefore, that prayer may prove the means of great benefit to him in his final physical struggle—benefit not to be brought down into comparison with any temporary profits, or to be estimated by any coin or currency of this world. "I know I am dying," said the devoted John Pawson, "but my death-bed is a bed of roses; I have no thorns planted upon my dying pillow. Heaven is already begun; everlasting life is won, is won, is won! I die a safe, easy, happy death. Thou, my God, art present; I know, I feel that thou art. Precious Jesus! Glory, glory, be to God!"

From all that has now been stated, we hold that we are fully warranted and abundantly encouraged to offer "prayers for the sick"—for their relief and restoration. We do not suppose, however, that our prayers are going to change God in his views or disposition; He need not change to answer prayer; this He hath ever purposed to do, and hath as really and truly ordained prayer as a condition of bestowing blessings, as He hath appointed ploughing and sowing as a condition of reaping a harvest.—We do not pray for the sick in an arbitrary or unconditional manner, but in deference to the wisdom and in humble submission to the will of God.

Nor in praying for the afflicted do we expect God to work miracles; but to guide effort and to bless means. We do not look for broken bones to be instantaneously cemented together; or for vitiated blood and fluids to be sent, as in a moment, corrected and renovated through the whole system: but we do look for such kindly and gracious influences to be bestowed upon the sufferer's mind as shall put his entire nervous system, and through it, all his vital functions, in the condition most favorable to knit the former and to purify the latter. Health of soul is health to the body also. And we do not expect "to deprive by petition a single molecule of miasmatic matter of its properties;" but we may ask and hope to be guided to remedies that shall effectually counteract the influence of that miasmatic molecule in the system.

We hold that in the foregoing Propositions we have a fourfold demonstration of "the physical value of prayers for the sick." In answer to prayer the judgment of the physician may be guided to the best of remedies—in the use of that remedy the patient's mind may be disposed into such a trusting, calm, and hopeful frame as may prove most conducive to his recovery—or if Divine Wisdom shall see fit that his restoration be delayed, he may be imbued with such resignation as shall sweetly lighten and relieve him of more than half his burden of suffering—or should it prove the Will of God that he must even die, he may be inspired with that supporting and sublime faith, that shall render him superior to fear and pain, and enable him to triumph gloriously over death itself.

Are not all these physical benefits—and physical

benefits, too, of the most precious and important nature to the Sufferer, and such as nothing but prayer to the Father of Mercies and God of all grace could secure for him? In them *he*, if none other, recognizes the hand of God as clearly as if the sun and moon stood still; and he blesses and praises God also as devoutly and ardently as if those luminous orbs had actually been made to pause in mid-heavens to effect these very benefits for him.

In these or similar ways God, we believe, often works, if not miracles, yet wonders of healing in answer to prayer. And of this it would be easy to adduce examples, both convincing and instructive, to almost any extent. In answer to the prayer of Abraham, the family of Abimelec was delivered from the sad distresses in which it was involved.—Hezekiah was sick nigh unto death, but through the blessing of God, granted in answer to prayer, upon the medical means used for his recovery, he was restored, and his life lengthened for a period of fifteen years. “I have heard thy prayer, and seen thy tears; and thou shalt recover,” was the joyful answer given him: and, “The living, the living, shall praise thee this day; and the father to the children shall make known thy truth,” was his grateful response.

Philip Melancthon, Luther's most dear friend and fellow-laborer, was lying, at a certain time, at the point of death. Information was sent to Luther with all haste. On his arrival he found him presenting all the usual premonitory symptoms of death—the fixed unconscious eye, the cold clammy sweat, the insensible lethargy. Upon witnessing these sure indications of a speedy

dissolution, as he mournfully bent over him, he exclaimed with great emotion, "Oh, how awful is the change wrought upon the visage of my dear brother!" On hearing his voice, Melancthon, to the astonishment of all present, opened his eyes, looked up, and said, "O Luther, is this you? Why don't you let me depart in peace?"—"We cannot spare you yet, Philip," was the reply. Luther then turned away from the bed, and fell upon his knees, with his face toward the window, and wrestled with God in prayer; he continued to plead with great fervency upward of an hour for his friend's recovery. He then rose from prayer, and went to the bed-side again, and took Melancthon by the hand. Upon this he again entreatingly said, "O dear Luther, why don't you let me depart in peace?"—"No, no, Philip, we cannot possibly spare you from the field of labor yet," was the answer. Luther then requested the nurse to go and prepare some nourishment, according to his instructions. When this was brought in, Melancthon was requested to take a little of it; but he declined, again saying, "Dear Luther, why will you not let me go home, and be at rest?" To which Luther replied as before, "Philip, we cannot spare you yet." Still declining to taste what had been prepared, Luther at length, deeming some decisive measure necessary, said, "Philip, take this, or I will excommunicate you." Philip, upon this, took a little; he soon began to amend, and ere long was restored to his wonted health and strength, and continued for many years to labor with great efficiency in the good cause of the Reformation.

When Luther returned home, he said to his wife with joy, "God gave me my brother Melancthon back in direct answer to prayer;" and then added, with patriarchal simplicity, "And God, on a former occasion, gave me you back, Kata, in answer to my prayer also."

Rev. Thomas Charles, of Bala, Wales, was a man of great piety, great learning, and great usefulness: among his literary productions was a *Polyglot Dictionary of the Bible*, a work of vast research and great merit; with him, also, originated that mightiest of Christian machineries, *The British and Foreign Bible Society*. Somewhat, now, over half a century ago, this good man was, to all human judgment, at the very point of death. In this critical, and as it seemed, hopeless hour, a prayer-meeting of his friends was held, in which earnest prayer to God was offered by all for his recovery, and by one aged Christian especially asking that *fifteen years* might be added to the useful life of his servant. These prayers were not "thrown upon the wind;" Mr. Charles was restored to health, and his life prolonged to the exact extent pleaded for by the aged saint. He filled up the fifteen added years with great usefulness, and in full expectation all along of release at the end of that period. On his last visit to some friends, he said that he could not expect to see them again, as he was now in the last year of his life.—Strange as it may seem, his death occurred just at the termination of the fifteen years.

Instances, such as the foregoing, of what godly men have asked in prayer for the sick coming to pass in exact accordance with their requests, might be produced

ad libitum. Now, if to all these it be said that the same results *might have followed* had no prayer been offered, we reply, And they might *not* have followed—thus one “perhaps” exactly balances another “perhaps,” and the matter is left just where it was. But we affirm, that if in such cases, frequent and diversified as has been their occurrence, there was no connection or relation between the prayers and what followed them, the coincidence would be more inexplicable, and their falling out by accident more incredible far, than that the Father of Mercies should hear and answer the prayers of his worshipping children.

But in this matter we are not left to disputed examples or doubtful inferences—we have the sure Word of Truth for our guide. To pray for our sick or suffering brethren and friends—for their relief, their comfort, their recovery—we have the clear authority and the gracious encouragement of the Great Teacher, whose commission from God, “To preach the gospel to the poor, to heal the broken-hearted, to preach deliverance to the captives, and recovery of sight to the blind, to set at liberty them that are bruised, to preach the acceptable year of the Lord,” is established by a number and diversity of evidences that constitute the mightiest and most convincing of demonstrations. With implicit faith and thankful hearts, therefore, we follow His instructions, and embrace His promises, as with full hearts and tearful eyes we pray over our sick and dying kindred.

“But if some *frigid Sceptic* still will dare
To doubt the all-prevailing power of Prayer;
As if ’twere ours, with impious zeal, to try
To shake the purposes of Deity;

Pause, cold philosopher, nor snatch away
 The last, the best, the wretched's surest stay.
 Look round on life, and trace its checkered plan,
 The griefs, the joys, the hopes, the fears of man ;
 Tell me, if each deliverance, each success,
 Each transient golden dream of happiness,
 Each plan that genius in the race acquires,
 Each thrilling rapture virtuous pride inspires,—
 Tell me, if each and all were not combined
 In the great purpose of the Eternal Mind ?

Thus while we humbly own the vast decree,
 Formed in the bosom of Eternity,
 And know all secondary causes tend
 Each to contribute to one mighty end ;
 Yet while these causes firmly fixed remain—
 Links quite unbroken in the endless chain,
 So that could one be snapped, the whole must fall,
 And wide confusion o'er the world prevail ;
 Why may not our petitions, which arise
 In humble adoration to the skies,
 Be foreordained the causes, whence shall flow—
 Our purest pleasures in this vale of woe ?
 Not that they move the purpose that hath stood
 By time unchanged, immeasurably good,
But that the event and prayer alike may be
United objects of the same decree.”—DURANT.



THEORY OF EVOLUTION

AND

MAN'S INNOCENCE, FALL AND REDEMPTION.

Nature has been personified. Living beings have been called the works of nature.—CUVIER.

The evolutionist plays with nature as he pleases, and makes her do what he wishes.—M. FLOURENS.

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I. THE ORIGIN OF SPECIES: THE INSURMOUNTABLE DIFFICULTIES TO THE DEVELOPMENT HYPOTHESIS: THE HONORED CHIEFS OF SCIENCE AGAINST IT.


II. ORIGIN OF MAN: HIS INCOMPARABLE SUPERIORITY TO THE HIGHEST OF THE SIMIADÆ OR APE FAMILY: SEPARATED FROM THEM BY A GULF PRACTICALLY INFINITE.



THEORY OF EVOLUTION

AND THE

INNOCENCE, FALL, AND REDEMPTION OF MAN.

N the beginning God created the heaven and the earth, with all things that are therein; the grass and herbs and trees of the dry land, the fishes of the sea, the fowls of the air, and the beasts of the field; He created man also, in His own image created He him, male and female created He them. This is the Bible Record of creation; and this has been and still is the common view and common faith of the nations of Christendom—of wise and learned and great men, as well as of the multitude in general. Of late, however, another and a very different account of the origin of the world and of its living tenants has been invented and put forth with great confidence and boldness. A new theory, or, rather, an old theory under a new phase, has been wrought out with no little labor and ingenuity, which ascribes the origin and production of the existing order of things, not to the creative power and wisdom of God, but to the operation of the inherent powers and

tendencies of matter—we refer to what is called the Theory of Evolution. The advocates of this doctrine are not altogether at one in their views; hence the theory is presented to us under somewhat different aspects; but the aspect of it with which we are chiefly concerned at present is that set forth by Mr. Charles Darwin, in his *Origin of Species*, of which his more recent work, *The Descent of Man*, is the natural and legitimate conclusion.

This theory, as presented by Mr. Darwin, avowedly discards the inspired history of creation, and claims to be the record of visible and material nature, which may be read and known of all men. The scheme is this—The globe on which we dwell has existed through periods and cycles of time that practically amount to infinite duration; at an incalculably distant date in the past, life commenced on our planet under a few low and simple forms, mere cells or minute bubbles; under the action of light, heat, electricity, and other physical forces, these reproduced their kind, each individual differing slightly from others by some trivial variation of form, size, weight, or color; and these again in like manner had their offspring, which inherited their respective parental variations, and, in many instances, manifested beside them some new and additional ones of their own. In this way, reproduction together with transmission and multiplication of individual peculiarities went on through successive and unnumbered generations. The process of variation advanced slowly, indeed, yet steadily, till animated beings presented very different forms, and became ad-

dicted to widely different modes and habits of life. As the unmeasured periods of the mighty past slowly rolled on, wider and wider grew the divergence, till distinct species, genera, and orders of animals were produced and established—some dwelling in the seas and rivers, some inhabiting the dry land, some flying through the air, and some burrowing in the ground.

In the course of time, every species and individual, it is supposed by this theory, had to struggle more or less severely for existence, owing to the vast increase of all kinds of animals. Those which had inherited variations that would in any degree aid them in this struggle, or that were of a kind tending to preserve their lives, or to enable them more surely to propagate their kind, were generally in the long run preserved, and transmitted their favorable peculiarities to some, if not to all, their offspring; which peculiarities were thus from generation to generation gradually intensified, till at length they reached their highest degree of perfection and utility. On the other hand, individuals or species that had inherited unfavorable variations entered the struggle for existence under corresponding disadvantages, and consequently were the more easily worsted, oppressed, and destroyed; so that generally in process of time they became extinct. In this way, it is said, Nature has all along been eliminating the feeble and ill-favored, and securing the survival of the fittest. This process is entitled "Natural Selection."*

* Here we have *selection* without *volition*, an expression self-contradictory and absurd.

It is by this twofold operation of "gradual variation" and "natural selection," that the earth has fostered and gained from a few simple forms, three or four at most, it is supposed, all its present vast and magnificent variety of living tenants—its fishes and reptiles, its insects and worms, its birds and beasts, and even Man himself. Such is the Theory of Evolution.

To show the reader (if that be necessary) that the above is a correct and fair representation of this wonder-working Scheme, we make the following quotations from Prof. Darwin's works :

"The consideration of these facts" (indicating the vast periods occupied in the formation of the earth and the production of its inhabitants) "impresses the mind almost in the same manner as does the vain endeavor to grapple with the idea of *eternity*." *

"Life was originally breathed by the Creator into a few forms or into one; and whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning, endless forms most beautiful and most wonderful have been and are being evolved." †

"Slight individual differences suffice for the work, and are probably the sole differences which are effective in the production of new species." ‡

"Natural Selection acts only by the preservation and accumulation of small inherited modifications, each modification being profitable to the preserved animal." ||

* *Origin of Species*, 6th Ed., p. 269.

† *Ib.*, p. 429.

‡ *Animals and Plants under Domestication*, Vol. II., p. 192.

|| *Origin of Species*, 6th Ed., p. 75.

"It may metaphorically* be said that Natural Selection is daily and hourly scrutinizing, throughout the world, the slightest variations, rejecting those that are bad, preserving and adding up all that are good; silently and insensibly working, whenever and *wherever opportunity offers*, at the improvement of each organic being in relation to its organic and inorganic conditions of life. We see nothing of these slow changes in progress, until the hand of time has marked the lapse of ages." † *

"Natural Selection, if it be a true principle, will banish the belief of any great and sudden modification in their structure." ‡

"If it could be demonstrated that any complex organism existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down." ||

"Slight fluctuating differences in the individual suffice for the work of Natural Selection." §

"To man I give a pedigree of prodigious length, if not of noble quality. The most ancient progenitors in the kingdom of the Vertebrata, at which we are able to obtain an obscure glance, apparently consisted of marine animals, resembling the larvæ (or grubs) of existing Ascidians. Now, Ascidians are invertebrate, hermaphrodite, marine creatures, permanently attached to a support. They hardly appear like animals, and consist of

* Here we have, not a "metaphor," but *personification*—a wide and most important difference.

† *Origin of Species*, p. 65.

‡ *Ib.*, p. 62, etc.

|| *Ib.*, p. 227.

§ *Descent of Man*, Vol. II., p. 370.

a simple tough, leathery sack, with two small projecting orifices. They have recently been placed by some naturalists among the Vermes, or worms. Their larvæ somewhat resemble tadpoles in shape, and have the power of swimming freely about. These animals probably gave



AN ASCIDIAN.



ASCIDIAN TADPOLE.

Given to convey to the reader an idea of his "very remote Ancestors," according to Mr. Darwin.

rise to a group of fishes, as lowly organized as the Lancelet; and from these the Ganoids, and other fishes like the Lepidosiren, must have been developed. From such fish a very small advance would carry us on to the Amphibians. We have seen that birds and reptiles were once intimately connected together; and the Monotremata now, in a slight degree, connect mammals with reptiles. But no one can at present say by what line of descent the three higher and related classes, namely, mammals, birds, and reptiles, were derived from either of the two lower vertebrate classes, namely, amphibians and fishes. In the class of mammals the steps are not difficult to conceive which led from the ancient monotremata to the ancient Marsupials; and from these to the

early progenitors of the placental mammals. We may thus ascend to the Lemuridæ; and the interval is not wide from these to the Simiadæ. The Simiadæ then branch off into two great stems, the New World and Old World monkeys; and from the latter, at a remote period, Man, the wonder and glory of the Universe, proceeded. If any single link in this chain had never existed, man would not have been exactly what he now is. Unless we wilfully close our eyes, we may, with our present knowledge, approximately recognize our parentage; nor need we feel ashamed of it."*

Such is the theory of Mr. Darwin, and such he imagines to be the genealogy of the human family. The main and central idea in this theory of development, it will be observed, is, that by the occurrence, transmission, and aggregation of minute and fortuitous variations in the form, size, color, and habits of successive generations, all the present varieties of plants and animals, in the sea and on the land, have been produced. After the first breathing of life into a few simple forms, millions and millions of years ago, the evolution theory does not recognize and does not admit either Divine agency or Divine supervision, in furnishing or in peopling the world. Insensibly small and fortuitous variations, together with Natural Selection, have been the efficient instrumentality in the production of new species, new genera, new orders, and peopling the earth with its most beautiful and most wonderful varieties of living tenants. In

* *Descent of Man*, Vol. I., pp. 196, 203, 204, 205.

other words, the existing organic world, animal as well as vegetable, abounding with designs, beauties, contrivances and adaptations, past all description and all admiration, as it is by all confessed to be, is the result of haphazard or accidental accumulation of minute variations. Truly, here is an illustrious proof of the old adage, "When philosophers set out to be foolish, there is no folly equal to theirs."

Few readers need be reminded that this is a return to the notion put forth nearly twenty-four centuries ago—we refer to that of Democritus, who maintained that the world and all things therein were the result of "a fortuitous concourse of atoms." In nothing save the name, does the theory of Darwin essentially differ from the theory of Democritus, the absurdities of which have been exposed a thousand times and in a thousand different ways. Democritus exalted *fortuitous atoms*! Darwin deifies *minute variations*! Who hath the pre-eminence? The present is often pronounced an era of progress, but in the matter before us, it would seem, of progress *backward*. Here is the nineteenth century of Christianity going back to heathen Greece, and to heathen Greece in its very childhood and crudeness and ignorance.

The theory of evolution, which thus excludes God from his own world, and ascribes his glorious works to fortuity, it hardly needs be said, is in direct conflict with the Mosaic account of creation. Yet Mr. Darwin tells us that "he can see no good reason why the views he has given to the world should shock the religious feelings of any." A celebrated author and divine, he informs us,

has written to him (for his consolation we suppose) that "he has gradually learned to see that it is just as noble a conception of the Deity to believe that He created a few original forms capable of self-development into other and needful forms, as to believe that He required a fresh act of creation to supply the voids caused by the action of his laws."

We are not surprised to find a mere Deist express himself as does Mr. Darwin here; but how a *Divine* can consistently hold forth such language as this we are utterly at a loss to understand. Belief, mere belief in God, as the Creator of the world, may entitle a man to the credit of being a respectable Theist, but it does not constitute a *Christian Divine*. There are other doctrines, other "beliefs, in no degree less important to the moralist or the Christian than even that in the being of a God, which seem wholly incompatible with the development hypothesis. If, during a period so vast as to be scarce expressible by figures, the creatures now human have been rising, by *almost* infinitesimals, from compound microscopic cells,—minute vital globules, begot by electricity on dead gelatinous matter,—until they have at length become the men and women whom we see around us, we must hold either the monstrous belief, that all the vitalities, whether those of monads or of mites, of fishes or of reptiles, of birds or of beasts, are individually and inherently immortal and undying, or that human souls are *not* so. The difference between the dying and the undying,—between the spirit of the brute that goeth downward, and the spirit of the man that goeth upward,—

is not a difference infinitesimally, or even atomically *small*. It passes all the breadth of the eternity to come, and is an *infinitely great* difference.

“If the spirit of a monad or of a mollusc be not immortal, then must there either have been a point in the history of the species at which a dying brute—differing from its offspring merely by an inferiority of development represented by a few atoms, mayhap by a single atom—produced an undying man; or man in his present state must be a mere animal, possessed of no immortal soul, and as irresponsible for his actions to the God before whose bar he is, in consequence, never to appear, as his presumed relatives and progenitors, the beasts that perish. Nor will it do to attempt escaping from the difficulty, by alleging that God at some certain link in the chain *might* have converted a mortal creature into an immortal existence, by breathing into it a ‘living soul;’ seeing that a renunciation of any such direct interference on the part of Deity in the work of creation forms the prominent and characteristic feature of the scheme—nay, that it constitutes the very nucleus round which the scheme has originated. And thus, though the development theory be not atheistic, it is at least practically tantamount to atheism. For, if man be a dying creature, restricted in his existence to the present scene of things, what does it really matter to him, for any one moral purpose, whether there be a God or no? If in reality on the same religious level with the dog, wolf and fox, that are by nature *atheists*—a nature most properly coupled with irresponsibility—to what one practical

purpose should he know or believe in a God whom he, as certainly as they, is never to meet as his Judge? or why should he square his conduct by the requirements of the moral code, further than a low and convenient expediency may chance to demand?"*

The Scripture plainly, emphatically, and throughout, declares that the first human pair, the first man and woman, *were created by God*—not slowly metamorphosed in the course of indefinite ages out of pre-existing animals, but brought into being by a special, distinct, and immediate act of the Creator. Thus we read: "And God said, Let us make man in our image, after our likeness: So God created man in his own image, in the image of God created He him; male and female created He them. And God blessed them, and said unto them, Be fruitful and multiply and replenish the earth, and subdue it." Such is the Bible record of the origin of the human race; from this single pair, Adam and Eve, it declares has descended the whole world's population.

Scripture, moreover, without figure, or parable, or allegory, plainly teaches that by disobedience to the Divine command these, the original heads of the human family, sinned and fell, and that through their fall the character of all their descendants, like their own, has been affected in a dreadful manner for evil, so that, without exception, they have become heirs of depravity, suffering, and death. "By one man sin entered into the

* *Foot Prints of the Creator*, pp. 38, 39.

world, and death by sin." "In Adam all die." Thus the entire doctrine of depravity, with all its sad fruits of suffering and sorrow and death, is in the Word of God identified with the fact that there was a single pair at the head of the human race, who were created holy and happy, but through transgression forfeited both their innocence and bliss, and thereby involved their whole posterity in the same ruin.

Upon this dark and broad fact of man's fall and depravity is based the grand and central doctrine of revelation—*Redemption through Christ*. This only rendered the incarnation and death of the Son of God necessary. This is the sole foundation of the whole scheme of redeeming grace. The human race according to the plan of Salvation is ONE—one in origin, one in depravity and guilt, one in death and eternal doom. And the sacrifice of the Cross was offered once for all, in atonement for the sin of the race. "Behold the Lamb of God that taketh away the sin of the world." In redemption, as in the fall, there is one Head, each the counterpart of the other. "As in Adam all die, even so in Christ shall all be made alive." "Since by man came death, by man came also the resurrection of the dead." "As by one man's disobedience many were made sinners, so by the obedience of one shall many be made righteous."

Redemption by Christ pre-supposes our fall into sin, and our fall into sin pre-supposes our original righteousness. These three fundamental facts are inseparable in the Word of God, and must stand or fall as one. We

see hence how closely related are the doctrines of sin through the first created man, and of redemption through Christ, the Lord from heaven. These two doctrines taken together compose the warp and the woof, the sum and the substance, of the whole Bible. Deny one of these and you deny the other; expunge one of them from the sacred volume and you expunge both; and take both away, and there will remain of it but the empty husk of words without meaning or significance.

Who, then, but must see that the direct tendency of the Theory that would Evolve man by insensible degrees from the brute, is to sap the whole foundation of the Bible.

Believing this theory to be irreconcilable alike with the testimony of Scripture and the facts of nature—that it invalidates the Bible history of creation; that it confounds the origin of rational and irrational beings, and sheds uncertainty and perplexity over their destination; that it saps belief in the immortality of the soul, in the accountability of man to God, and in the Christian scheme of salvation through Jesus Christ—believing this we now proceed to lay before the reader the evidences and arguments upon which we utterly reject it as a fundamental error of the most pernicious and fatal tendency.

We shall speak first of the Theory in its application to the origin of species in general, reserving to a separate chapter the consideration of the more proximate origin and paternity assigned to Man.

I. THE ORIGIN OF SPECIES.

THE Sacred History of creation teaches us that not only the material and the physical arrangements of the globe are the work of God, but also that the grass, herbs, trees, fishes, whales, reptiles, birds and beasts, and man himself, are so many *creations* of God, originally called into existence by special and immediate acts of his Almighty Power. The Theory of Evolution maintains the contrary, and asserts that all existing organisms have been by slow degrees developed out of a few simple forms, or perhaps out of one such form only.

Now this doctrine, this whole conception of "natural development," let it be observed at the outset, is but a *hypothesis*—but an *imagined scheme*—to account for the phenomena of animated nature without the intervention of Divine Power. It has for its bases, not facts, but assumptions; and for its bonds of connection, not reasons, but conjectures. It stands to the present hour, notwithstanding the Herculean efforts of its able advocates, unsupported by anything like clear or conclusive proof. It runs counter to the conclusions of natural reason. It has failed to gain the assent of men in general. It has been refused the support of the leading men in Natural Science, beyond a few speculative minds. This Mr. Darwin himself is obliged to acknowledge: "Of the older and honored chiefs in natural science, many unfortunately are still opposed to evolution in every form."*

* *Descent of Man*, Vol. I., p. 2.

"Authors of the highest eminence seem to be fully satisfied with the view that each species has been independently created."*

1. *If one animal species had produced another, it might reasonably be expected that such a thing had been observed or known in some age or country of the world.* But it has not: man has never been a witness of the beginning of a new species; the origin of every species now living antedates the history and the creation of man.

It is true that animals vary, that even those descending from one and the same parentage vary, and have their individual peculiarities; it is also true that these variations or peculiarities are often, more or less distinctly, transmitted to their offspring. And it is further true, that in this way clearly defined *varieties* are frequently produced, but a distinct *species* never. These variations all take place within certain limits; they have never been known to cross the lines of demarkation between species and species.

A few domestic animals, by the constant care of man in breeding successively from individuals possessing favorable peculiarities, and rearing the offspring under shelter and on abundance of good food, are greatly changed and improved, and form a marked *breed* or *variety*. But even these, where human care relaxes or is withdrawn, soon begin to relapse and deteriorate; the old forms return, and the improved character disappears. The tame and improved breed of hogs that have often-

* *Origin of Species*, p. 428.

times been left or lost in the forests of North America, and the fine Spanish horses turned loose on the pampas of South America, are convincing examples of this. The margin of variation has never been known broad enough to originate new species; it has, indeed, produced varieties or breeds that have sometimes been mistaken for species. That any animal organism has produced, or can produce, another which differs from itself in any essential or truly specific character, is an assumption unsupported by any well-established fact. No organism is ever seen to exert such power *now*, and we have satisfactory evidence that none have within the whole period of human history. It is clear from paintings on Egyptian monuments and from the mummies of sacred animals—the Bull, the Dog, the Cat, the Ape, the Ichneumon, the Crocodile and the Ibis—found in Egyptian tombs, that for three thousand years at least, there has been no change in certain species. They have retained the same general form and even the same specific differences for thirty centuries.

If we say, and the estimate is fair, that cattle and horses reproduce their kind once in five years, we have since the time of these paintings and mummies six hundred generations for these animals. Now, if this long chain of descents has done nothing—and this is demonstrable—toward developing one species from another, what grounds have we to suppose that six thousand or even sixty thousand generations would effect anything toward such a result? Birds and insects reproduce their kind every year; in their case, therefore, we have, since

the time of the above Egyptian relics, no less than three thousand generations; and if this vast and prolonged series, likewise, has done *absolutely nothing* toward transforming these creatures into new or other species—why, common sense decides that thirty thousand years or even thirty million would do just as little, for multiply *nothing* by millions, or by infinity, and it is *nothing* still.

Much that seems plausible has been finely said and finely written about the principles of “spontaneous variation,” the “laws of inheritance,” and “natural selection;” and all this has been wrought out by active and vivid imaginations into a “splendid Theory.” But let those who say they believe in this theory, point out a single clear and unmistakable instance of a new species produced in this way. This they have often been challenged to produce, but have never been able to do. Even Professor Huxley, strongly biased as he is in favor of this hypothesis, is compelled to admit that “there is no instance in which a group of animals having all the characters exhibited by species in nature, has ever been originated by selection, whether natural or artificial.”* And Mr. Darwin himself, indefatigable as he has been all his life long in the search, cannot adduce as much as one clear and certain example of the kind.

2. *If the theory of development be true, we ought not to find any bar, certainly not an insuperable bar, to its operation set up in Nature itself.* But such a bar we do find throughout the animal kingdom.

* *Lay Sermons*, No. 12.

Against the transmutation or commixture of species Nature, or rather the God of nature, has established the impassable bar of *sterility*. If a male and female of the same species are brought together, they will produce offspring of the same kind with themselves; and if these again breed together, the same result will follow; and if this last progeny in like manner come together, they will still be fertile and bring forth their like. If animals are of the same species, there is no bar to their reproductive capacities, no matter how widely they may differ as *breeds* or *varieties*. Two animals of the horse species, as dissimilar in size, color and appearance as the little black Shetland pony and the tall white Yemen Arabian, will breed together, and their descendants, however inferior, will continue to perpetuate their brood, without check or failure. But if members of two distinct species, however similar to each other they may be, come together to breed, there is a check; in the vast majority of cases the union is fruitless, and even in the few cases where such a cross produces offspring, it is found that the power of reproduction is withheld from this hybrid offspring, they cannot breed together—that is, a male and female hybrid can have no offspring, they are absolutely barren. Mixture in this way is arrested at the end of the first step—*there* promptly and infallibly a bar, a bound is set which none can pass. “The founding of new forms by the union of different species, even when standing in close natural relation to each other, is absolutely forbidden by the sentence of sterility which Nature pronounces and enforces upon all hybrid off-

spring."* This mysterious check is in force among all animals without exception. Mules, the hybrids of the ass and horse species, cannot perpetuate their kind. The offspring of two birds as much alike as the common domestic goose and the large Muscovy duck will not propagate their species; the mixture is a hybrid without fecundity, and it perishes with the first generation.

But let it be observed, that even hybridism is not a natural, but an *artificial* result—it is the fruit of human interference. Hybridism among animals in a state of nature is unknown. "There are no less than 288 wild species of the pigeon family; yet, although some of these approach very near to others in their characters, they will not, so far as experiments have yet been made, pair together."† There are no less than four hundred species of humming-birds, and many of these are in all respects so similar that none but the practised student can distinguish them; yet a case of mixture or hybridism between any two species, however nearly allied, has never been seen. This is Mr. Gould's testimony: "I mention this fact," he says, "to show that what we designate a Species has really distinctive and constant characters; and in the whole of my experience, with many thousands of Humming Birds passing through my hands, I have never observed an instance of any variation which would lead me to suppose that it was the result of a union of two species. I write this without bias, one way or the other, as to the question of the Origin of Species.

* Argyll's *Primeval Man*, p. 39.

† Lyell's *Prin. of Geol.*, Vol. II., p. 307.

I am desirous of representing nature in her wonderful ways as she presents herself to my attention at the close of my work, after a period of twelve years of incessant labor, and not less than twenty years of interesting study."*

This natural bar established by Nature between species and species is "a sore let and hindrance" in the way of the development hypothesis, but which it can neither explain, nor imitate, nor do away with. The most ardent advocates of the Scheme are obliged to acknowledge that all their experiments in breeding, in crossing and recrossing, have never been able to produce any approximation to it. "There is one set of peculiarities," says Huxley, "which the theory of selective modification, as it stands at present, is not wholly competent to explain. Here are the phenomena of hybridism staring you in the face, and you cannot say, 'I can by selective modification produce the same results.' It is admitted on all hands, that it has not been found possible to produce this complete physical divergence by selective breeding."†

Here, then, stands the unyielding Law of Hybridity square across the track of the Theory of Development. It presents a perplexity. The Engineer-in-Chief surveys it with feverish anxiety—he walks round it, and contemplates it from every point of view—but there it remains a stubborn fact—it cannot be placed on board and taken along—it cannot be thrust out of the way on this side

* Gould's *Trochilidae*, as quoted by Argyll.

† Huxley's *Origin of Species*, pp. 140, 141.

or on that—neither can it be sunk and buried out of sight. At length patience, like natural variation, finds its limits, and lo! we hear him speak vexedly with his lips—"To grant to species the special power of producing hybrids, and then to stop their further propagation by different degrees of sterility, not strictly related to the facility of the first union between their parents, seems a strange arrangement!"*—But strange as it may be, the arrangement *has been made*, and its universal operation must be acknowledged to be evidence, clear and strong, in proof of the stability of species, and consequently, in refutation of the theory of development by unlimited variability. Whenever a new species has come into being, or begun to be, we may be sure some power has been in operation not included "in the ordinary course of nature."

3. *If the Development Theory be true, there must have been a series of forms graduating insensibly from the primary creature, whatever that was, to each distinct kind of animal now living; and these being so many and various, it might reasonably be expected that its able and zealous advocates had discovered more or less of these series or chains of descent.* But they have found none—no, not one.

"As all living forms of life," says Mr. Darwin, "are the lineal descendants of those which lived long before the Cambrian epoch, we may feel certain that the ordinary succession by generation has never once been broken, and that no cataclysm has desolated the whole

* Darwin's *Origin of Species*, p. 245.

world.”* Now, if these chains of lineal descent have been or can be traced backward, or if clear evidence of their having existed has been or can be traced in the fossil records of the earth's crust, it must be accepted as strong evidence in support of the doctrine of evolution.* But has this been done? Can Darwin, or Huxley, or any other believer in this hypothesis point them out to us? Can they unmistakably and without a break follow any of them? Out of the thousands and millions which, according to their theory, must exist, can they trace out as much as one, great or small, belonging to sea or land, in this or any other quarter of the globe? No, not *even one*.

How is this desideratum accounted for? What have the supporters of the theory to say in view of this extraordinary fact? They say, “The discovery of fossil remains has been an extremely slow and fortuitous process.” But this is a mere evasion of the difficulty. The search for these, fortuitous as it may be, is not as “for a needle in a hay-mow.” The organisms that have lived and died on the earth have been so numerous, that these lines of lineal descent must pierce down through the rocky formations of the past thick as stand the straws of wheat in the harvest field. Admitting that multitudes of them have faded out of existence, and left no visible trace behind, yet other multitudes must have left remains that were capable of being preserved, and, like the fossils actually found, must have been preserved in

* *Origin of Species*, p. 428.

great numbers, if they ever existed. Of these long lines of closely graded fossils, running back from all the living species to the low and simple forms from which they have descended—have none of them been discovered? none of them been stumbled upon? Numerous and diversified and universally strewn, as Mr. Darwin is confident they have been, a few of them at least ought to have been found and traced out by this time.

“The record,” we are again reminded, “has been but very imperfectly read thus far.” Be it so; but has not as much as *one line* been yet read or spelled through? Every desirable aid and facility for this end have been afforded. Nature herself has laid open her records before us, even from their earliest dates. In every clime and region, the strata of the earth is found heaved and ruptured, so that often the geologist, in travelling a few miles in *distance* across these broken layers, passes over ages and cycles of ages in *time*. Earthquakes have split open mountains to their bases, and thrust up islands from the bottom of the seas. Rivers, too, have scooped out for themselves lengthy channels, vast cañons, hundreds and even thousands of feet deep, through the solid rocks. Tides, also, have washed and sifted the crumbling ledges and soil along the shores for thousands and tens-of-thousands of miles. Add to all this what has been done by the labor of man—mines have been worked far and deep, plains have been excavated for canals, valleys have been filled and hills have been pierced for railroads, in every direction, over all Europe and America, for the last half a century. And through this whole period, geologists in

great numbers, from every nation in both continents, have been exploring these strata and chasms and shores and excavations with keen and scrutinizing eyes. In short, "sea and land and air, all around the world, have been vexed by their curious inquiries." And what has been the result? With all these facilities proffered by nature and art, and after all this labor and investigation and study, not one complete line of lineal descent has been traced—out of the more than forty thousand different species of fossil remains collected, not a single chain, or even any considerable part of a chain, can be constructed. The utmost that has been accomplished has been to link together a few varieties of the same species. Between species and species, order and order, in every direction, among the living and among the dead, there have been found breaks, which no known form or forms can span. Along every line run in this search by the most ingenious engineers of evolution we find a succession of gaps, and many of them gaps so wide and deep as to forbid the idea that a connecting chain ever stretched across them.

And what imparts striking significance to this fact is, that often transitional or connecting forms are utterly wanting where we might most naturally expect to find them. No connecting links between molluscan and vertebrate fish have ever been discovered. No forms slowly graduating from reptiles into birds have ever been brought to light: "Those remarkable fossil reptiles, the Ichthyosauria and Plesiosauria, extended, through the secondary period, probably over the greater part of

the globe; yet no single transitional form has yet been met with, in spite of the multitudinous individuals preserved.* The same is true of the Cetacea or whale group; no relic of an incipient stage, or half-way developed form, has been anywhere detected. The Cheilonian order—the tortoises, turtles and terrapins—is another instance of an extreme form without any transitional stages as yet known. Again, Batrachians—frogs and toads—so far as known, have no link to connect them to the Eft group on the one hand, or to the reptiles on the other.

The only instance, says the author last quoted, in which an approach towards a series of nearly related forms has been obtained is the existing Horse, its predecessor Hipparion, and other extinct forms. But even here there is no proof whatever of modification by minute and infinitesimal steps; *a fortiori* no approach to a proof of modification by “natural selection,” acting upon indefinite fortuitous variations. “These extinct forms,” says Professor Owen, “differ from each other in a greater degree than do the Horse, the Zebra, and the Ass, which are not only good *zoological* species as to form, but are species *physiologically*, *i. e.*, they cannot produce a race of hybrids fertile *inter se*.”†

To what has been presented under this argument, we may add the testimony of one who stands among the foremost of living geologists, Professor Dana, of Yale College: “Species have not been made out of species

* Mivart's *Genesis of Species*, p. 146.

† *Anatomy of Vertebrates*, Vol. III., p. 792.

by any process of growth or development, for the transition forms do not occur; the evolution or plan of progress was by successive creations of species, in their full perfection. The types are wholly independent, and are not connected lineally, either historically or zoologically. The earliest species of a class were often far from the very lowest, although among the inferior. In many cases the original or earliest group was but little inferior to those of later date, and the progress was toward a purer expression of the type. But geology declares, unequivocally, that the new forms were new expressions, under the type-idea, by *created* material forms, and not by forms educed or developed from one another."

"The evidence of Geology, to-day," says Professor Le Conte, "is that species seem to come in suddenly and in full perfection, remain substantially unchanged during the term of their existence, and pass away in full perfection. Other species take their place apparently by *substitution*, not by *transmutation*." *

4. *If the Development Theory be true, no animals of high and complicated organization should be found introduced suddenly, or at once, upon the scene, but by slow and insensible degrees: as there ought to be no organic chasms, so there ought to be no organic leaps; for, according to this hypothesis, none ever occurred. But we discover both.*

We shall find that the scheme harmonizes as little in this respect with the revelations of geology as it did in the preceding. A great number both of vegetable and

* *Religion and Science*, p. 22.

animal organizations, of high grades, appear abruptly, and some of them with startling suddenness, upon the surface of our planet—"with no finely graded antecedents by the aid of which they might have crept up to their high places. Huge ferns such as are now nowhere seen; huge pines, stout and lofty as any that dominate Norwegian forests, appeared suddenly—with nothing between them and sea-weeds, not even the mosses. Huge cephalopods, with shells twelve or fifteen feet long, and of the very highest mollusc structure, appeared suddenly—with nothing between them and nothing. Huge sharks and Ganoids, over twenty feet long, and of the very highest type of fish structure—with great organic blanks just behind them—began the Age of Fishes. Huge reptiles from thirty to sixty feet long, and of the very highest reptile structure—with great organic blanks just behind them—began the Age of Reptiles. Huge land-animals, as the Megatheres and Deinotheres and Mastodons, to some of which our largest modern quadrupeds are mere pigmies; huge sea-mammals, as the Zeuglodon, seventy feet long—all with great organic blanks just back of them—began the Age of Mammals. All of these came upon the scene with extreme abruptness; as if evoked by the stroke of a magician's wand.

"Now the Development Scheme does not object to huge and high-graded organisms, but it does object, and that most strenuously, to their occurring by *huge leaps*. It makes oath that they cannot do so. Lower species of the same group must precede them. They must reach their pinnacle by climbing slowly along finely graduated

precursors of less dignity. There can be no great chasm as to size or grade of structure between them and the most similar of preceding organisms. You see how such a notion flies in the face of facts. These fossil giants just mentioned—all of them—crowd up hard against general extinctions. All of them have the next lower species of their respective groups after them in time, or at the most with them; never just before them. A great gulf yawns between them and their nearest kindred of the preceding formation—always as to size, often as to grade of structure, and sometimes as to both. The lower steps of the necessary flight are before the climbers, instead of just behind them. There is a sort of broken stairs to come down on, but none whatever to go up on. And this not in a single instance merely. It is the habit of the geologic Ages.”*

The supporters of the Development hypothesis feel and own this difficulty, but seek to escape from it by pleading that the geological record is imperfect, or at any rate has been but imperfectly read. Much, it must be acknowledged, remains to be investigated, and much too that will ever remain hard to decipher; still, “as Sir Roderick Murchison has long ago proved, there are parts of that record which are singularly complete, and in those parts we have the proofs of Creation without any indication of Development. The Silurian rocks, as regards Oceanic Life, are perfect and abundant in the forms they have preserved, yet there are no Fish. The

* *Pater Mundi*, Second Series, p. 118.

Devonian Age followed, tranquilly, and without a break; and in the Devonian Sea, suddenly, Fish appear—appear in shoals, and in forms of the highest and most perfect type. There is no trace of links or transitional forms between the great class of Mollusca and the great class of Fishes. There is no reason whatever to suppose that such forms, if they had existed, can have been destroyed in deposits which have preserved in wonderful perfection the minutest organisms.”*

5. *If the Evolution Hypothesis be true, then as we travel back in time and approach the commencement of the process of development, i. e., as we descend through the Quaternary, Tertiary, Secondary and Primary formations, animal structures should grow more and more simple, higher organisms should insensibly fade into lower, until at length nothing is left but mere embryos and fetuses, floating larvæ, or sessile cells, in the tepid shallows of primeval seas; for, from such, it is asserted, all have come.*

Again the question comes back to us, Are these things so? Let us step with the geologist into his chariot, and go and see for ourselves. Let us travel with him back toward the night of ancient chaos; and, that the result of our tour of observation may be fair and reliable, our journey shall be measured, not by centuries or milleniums, but by millions of years. Our way lies downward through the vast formations of the earth's crust. Bidding adieu to the green surface and the living scenes around us, we start on our descending course.

* Argyll's *Primeval Man*, p. 45.

The first step takes us past every trace of man and of man's works, and the next beyond the limits of all historic time. Reaching the great geological division of rocks called the TERTIARY, we pass through formation after formation, composed of sand, clay and lime, which together amount to a thickness of more than three thousand feet. As we descend through this long and diversified series of strata an *age* flies past at every step we take. We are on a road where the lapse of time is marked, not by a succession of seasons or of years, but by the coming and departure of repeated creations—by the slow excavation by water of deep channels and broad valleys in rocks of marble—by the gradual upheaval of ocean beds into mountain chains and continents—and by the insensible subsidence of other mountains and continents to the bosom of the deep, in which ages upon ages before they had been slowly formed. At length we are nearing the nether bounds of this great division of the earth's crust. All along our downward road, the animal population of the globe has been rapidly changing—strange, and yet stranger forms arresting our gaze at every stage. We have seen in foreign shapes sluggish elephants and mastodons and rhinoceroses, gigantic elks and fleet hipparions, browsing amid forest growths as strange to us as if we had alighted on the circumference of another planet. We have passed the family of the great and terrible *Dinotherium*, reposing in unconscious sleep amid the flitting of bats, the pranks of monkeys, and the hootings of nightly owls. We have noticed the depths of the sea

| ANIMALS. | | ROCK FORMATIONS. | PLANTS. |
|---|--|--|--|
| Age
of
Man
and
Mammals. | Post Tertiary

Tertiary. | <p>DILUVIUM
PLIOCENE
MIOCENE
EOCENE</p> | Age
of
Angio-sperms
and
Palms. |
| Age
of
Reptiles. | Cretaceous.

Weald.

Cretaceous. | <p>CHALK
GREEN SAND
WEALDEN
UPPER OOLITE
MIDDLE OOLITE
LOWER OOLITE</p> | Age
of
Cycads
and
Pines. |
| Age
of
Amphibians
and
Fishes. | Carboniferous.

Devonian. | <p>LIAS
NEW RED SANDSTONE
MAGNESIAN LIMESTONE
MILLSTONE GRIT
MOUNTAIN LIMESTONE
OLD RED SANDSTONE
OR DEVONIAN</p> | Age
of
Acrogens
and
Gymnosperms. |
| Age
of
Molluscs,
Corals
and
Crustaceans. | Silurian.

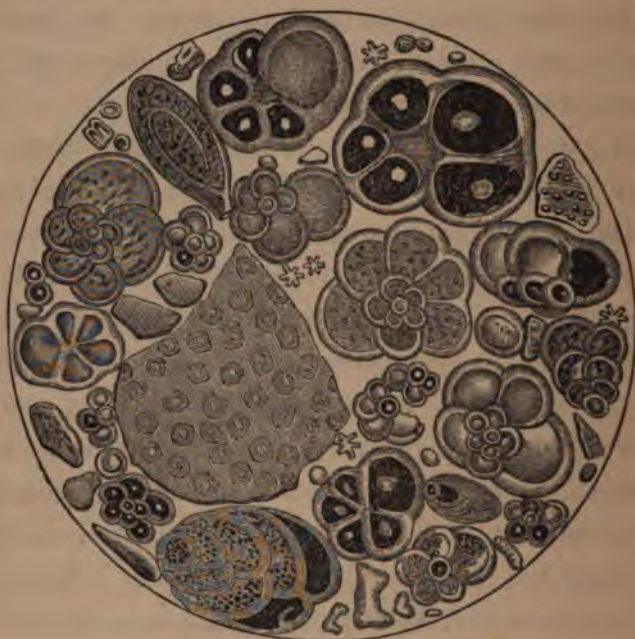
Cambrian. | <p>UPPER LUDLOW ROCK
AYMESTREY LIMESTONE
LOWER LUDLOW ROCK
WENLOCK LIMESTONE
B. SHALE
CARADOC SANDSTONE
LOWER SILURIAN
LANDEILD FLAGS
CAMBRIAN</p> | Age
of
Algae. |

foaming with the gambols of whales and dolphins and its shores glitter with shells of pearly white and beautiful forms. We have looked down upon flocks of the harmless palæotherium and of the agile xiphodon grazing peacefully in their luxuriant valleys. And at our present standing, on the utmost confines of the vast Tertiary, we see the lakes deeply plowed by huge pelicans and unwieldy turtles; snipes retreating among the reeds, and sea-gulls waddling upon the sands; gigantic buzzards hovering in the air watching their prey, while crocodiles draw their hideous forms through the marshy grasses.—And now our question is, Do these immensely remote and ancient scenes exhibit anything that may be construed into a confirmation of the development hypothesis? We must answer, No. We can discover nothing like a decline or a fading away of complex animal structures toward those that are simpler and lower. Here are beasts and reptiles and birds and fishes in all respects as highly organized as those we left alive on the surface of the globe as we started upon our journey. We can detect not a shade of difference, and, therefore, can find not a shadow of support for the theory. The point being so obvious, further observations here are unnecessary.

We remount our chariot and advance on our downward way. The next great geological division, the SECONDARY, opens before us with the Cretaceous or Chalk formation—a stratification of more than two thousand feet in thickness, and which was built up for the most part by slow sedimentary deposition at the bottom

of the sea. In passing through this immense cretaceous bed, therefore, we traverse a period of time that is overwhelming to contemplate. And through it all, how different, how strange the aspect of our globe as compared with what it now is. At this epoch, not one of the present great physical features of the earth was in existence—our vast mountain ranges, the Pyrenees, the Alps, the Himalayas, and the Andes had not yet been elevated above the even surface of the deep. The cretaceous sea flowed unruffled over the sites of Sinai and Lebanon and Ararat, while at its bottom was slowly accumulating the sediment, which after untold periods was to constitute the soil of Eden, and to enrich the vales and hills of God's Promised Land. But we must not linger here—continuing our descent, we next pass through the vast Jurassic system of more than a mile in thickness, whose multitudinous and varying strata testify of ages and cycles of ages occupied in its formation, which it is not in the power of man to compute or estimate.—Having now, then, reached an epoch that is all but immeasurably distant, let us halt again to test our Theory of Development. Are animal organisms *here* generally of a low and simple grade? Have they one with another declined and deteriorated as we have travelled backward in time? We find, indeed, very different animals; but different, not by insensible variation, but by distinct and clearly defined steps, as by separate creations. We discover no evidence, no indication whatever of living forms fading away toward the simplicity of worms or tadpoles. On the contrary,

throughout the chalk formation we find the remains of animals of high and complicated organization. Though much of present Europe and America were at this time sleeping beneath the still waters of the Cretaceous Sea, yet here are continents and islands clothed with rich vegetation, and shaded with groves of trees resembling



CHALK UNDER THE MICROSCOPE.

our palm and oak and walnut. Here are birds wading along the shores, and monster reptiles wallowing in the marshes. Here are shoals of fishes analogous to our pike and salmon fleeing before voracious sharks and dog-fishes. Here lived and abounded Belemnites, Ammonites, Turrilites, and other cephalopoda, larger, more

powerful, and more curiously organized than any Lolligines or Sepiæ existing in the present seas. The Beryx of the chalk sea in its organism was in no degree or respect inferior to the *Beryx lineatus* of King George's Sound to-day. And nothing can be more curious or grotesque or beautiful than the coral formations of this period. Nay, the whole substance of these chalk rocks, as Erhenberg has shown, is made up of minute but most elegant forms, those of Foraminifera and other Zoophytes. (See preceding cut.)

In the lower members of this Jurassic System, the Wealden and Oolite and Lias Rocks, we find the remains of the most complicated and extraordinary creatures that ever inhabited our planet. Here we see flying or hopping flocks of the indescribably curious Ramphorhynchus and Pterodactylus; the latter being half-vampire, half-woodcock, with crocodile's teeth along its tapering bill, and scale-armor over its lizard-like body—qualified thus for all services and all elements, it has been compared by Dr. Buckland to Milton's fiend, that

“O'er bog, or steep, through strait, rough, dense, or rare,
With head, hands, wings, or feet, pursues his way,
And sinks, or swims, or wades, or creeps, or flies.”

In the waters of this period roamed also, single or in company, the Pterosaurians, carnivorous reptiles, with powerful cylindrical bodies often twenty feet long. These had the head of a Lizard, the teeth of a Crocodile, a neck of excessive length resembling that of the Swan, the ribs of a Chameleon, the paddles of a Whale, and the tail of a Quadruped—yet for all this, presenting “a beau-

tiful example of the adaptation of structure to the peculiar exigencies of species." In the same waters lived the Ichthyosaurus, another reptile monster of gigantic proportions, often attaining the extraordinary length of thirty feet. It possessed the snout of a Porpoise, the head of a Lizard, the jaws and teeth of a Crocodile, the vertebræ of a Fish, the sternum of the Ornithorhynchus, the paddles of a Whale, and the trunk and tail of a Quadruped. The jaws often opened to the extent of a fathom, and were armed with one hundred and sixty teeth. Its paddles were constructed of more than a hundred octagonal bones, all most admirably connected together. Its organs of vision possessed the most remarkable peculiarities, and were of colossal dimensions, the eyeball sometimes being equal to a twelve-inch globe. "Before the orbit of the eye there existed a circular series of thin bony plates, which surrounded the opening of the pupil. This apparatus, which is met with in the eyes of some birds, and in those of the turtle and lizard, could be used so as to increase or diminish the curvature of the transparent cornea, and thus increase or diminish the magnifying power, according to the requirements of the animal; performing the office, in short, of a telescope or microscope at pleasure. The eyes of the Ichthyosaurus were thus an optical apparatus of wonderful power and of singular perfection. They gave the animal the power of seeing its prey far and near, and of pursuing it in the darkness, and in the depths of the sea. The curious arrangement of bony plates we have described furnished, besides, to its vast globular eye,

the power necessary to bear the pressure of a considerable weight of water, as well as the violence of the waves, when the animal came to the surface to breathe, and raised its head above the waves."*

Wonderful, indeed, was the aspect of our world at this remote epoch. Having a brilliant sun, high temperature, and copious showers, nothing in the existing scenery of the globe surpasses the rich and gorgeous vegetation which decorated the continents of the Jurassic period. And wonderful, too, was the population that occupied the earth's seas at this time—Pleisiosauri, Inguanodons, and Ichthyosauri ploughed the waters in every direction, while upon their surface floated innumerable Ammonites in light skiffs, some of them equal to a wagon wheel in diameter. Gigantic turtles and crocodiles also crawled through the marshes or basked upon the banks of lakes and rivers, while flocks of the dragon-like Pterodactyls, with their powerful wings and reptile bodies, were far and near cleaving the air in pursuit of their prey, and swarms of active insects everywhere darting and glittering in the morning and evening sunshine.

It hardly need be said, that in all this we discover nothing like support or countenance to the dream of Evolution—nothing, certainly, to indicate that animal organisms are declining and fading toward Darwin's Ascidians or his Ascidian larvæ.

But peradventure it may be urged, notwithstanding

* Figure's *World Before the Deluge*, p. 195.

our incalculable distance from the light of the present day, that we have not *yet* gone far enough to reach any marked evidence of this prior inferiority—so insensibly slow has been the progress of development. We resume, then, our journey and descending through full half a mile of Triassic and Permian formations, without stopping to notice either their animal or plantal productions—their graceful forests of Green Conifers and Tree-ferns, or their huge Labyrinthodons and Land-turtles and marine Crocodiles—our subterranean road brings us at length to the borders of the Great Coal Measures, which, in layers past enumeration, stretch before us to an average thickness of no less than ten thousand feet. We advance and cross it—what scenes! what productions! what periods! These coal strata, built entirely of the spoils of successive vegetable worlds, with the intervening beds of limestone made up wholly of the fossil remains of innumerable generations—how they all proclaim the prolonged periods occupied in their formation. How countless the ages necessary for their accumulation, when the formation of only a few inches required the life and death of many generations.* Standing here at the base of the Great Carboniferous System, and looking upward over its long and vanishing series of strata, all slowly built up of organized remains, we are filled with awe, and feel that we have reached a date that cannot be remote from the confines of eternity!

We have, indeed, sensibly approached the period when

* Professor Phillips calculates that, at the ordinary rate of progress, it would require 122,400 years to accumulate only sixty feet of coal.

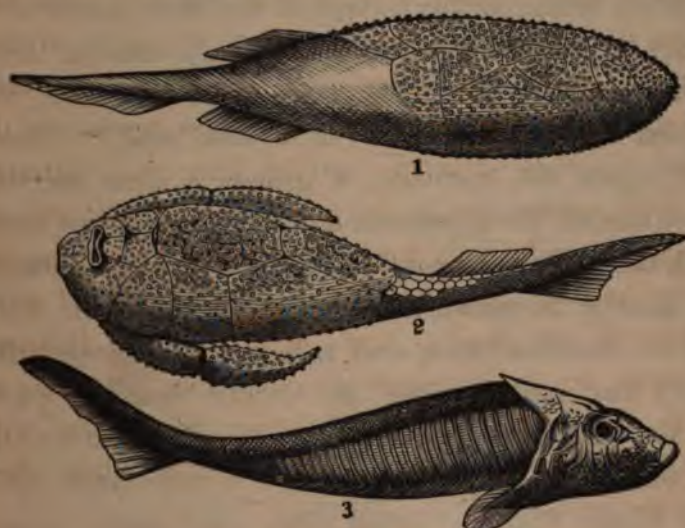
the earth was a molten mass, for here the internal heat of the globe still penetrates its cooling and consolidating crust, producing a high temperature, and a steamy atmosphere, over its whole surface; from pole to pole it has but one climate. The same exuberant vegetation abounds within the polar circles as between the tropics; the tall and graceful *Sigillarias*, the broad-leaved *Lepidodendrons*, the fluted *Calamites*, and elegant arborescent Ferns, with airy foliage as finely cut as the most delicate lace, flourished in Greenland as they did in Guinea, in Melville Island as well as in central Africa. Under this elevated temperature, of land animals we find no traces, except of a few flitting insects. Birds there are none. The seas, however, are occupied by an immense number of zoophytes and molluscans, and also by some crustaceans and Fishes. In the Mountain Limestone, the lowest member of this system, we find the *Nautili*, and with them the *Goniatites*, which are far more curiously constructed than their representatives in the present seas. But we tarry not here to examine or compare.

Though we have now passed through one of the most surprising periods in our planet's history, and have more than doubled the distance of our last halting-place from the light of the living, yet, that our observations may be complete and conclusive, we must still go forward. The mind shrinks, shudders almost, at the thought of plunging still deeper into the abyss of the unfathomable past. We have already reached an era of high temperature—the heat is become oppressive—the atmosphere is semi-opaque through the abounding exhalations.

tions arising from the warm earth—the sun is growing pale and dim even at his meridian—one shoreless ocean, dotted only with scattered islets, covers the whole face of the globe. Strange and dismal situation! Leaving behind the last footprint of air-breathing animal, and bidding adieu even to the last vestige of land-plants, we pass down into the vast DEVONIAN SYSTEM, whose wondrous records make up a volume of not less than two miles in thickness. The geological character of this immense formation, again, tells of ages innumerable. Though more than ten thousand feet in depth, yet the whole of it is obviously derived from the materials of more ancient rocks, fractured and ground and decomposed, and then slowly deposited in the tranquil waters of the Devonian Sea. The gradual and quiet nature of the process, and therefore of its immense duration, are evident from the numerous platforms of death, which mark its formation, each crowded with organic structures which lived and died where they now are seen.

“The fossils of this great System are remarkably numerous, and in a state of high preservation. And certainly a stranger assemblage of forms have rarely been grouped together;—creatures whose very type is lost, fantastic and uncouth, and which puzzle the naturalist to assign them even their class; boat-like animals, furnished with oars and a rudder;—fish plated over, like the tortoise, above and below, with a strong armor of bone, and furnished with but one solitary rudderlike fin; other fish less equivocal in their form, but with the

membranes of their fins thickly covered with scales;—creatures bristling over with thorns; others glistening in an enamelled coat, as if beautifully japanned.* Here were lobsters of such huge proportions, that an ordinary sized lobster of the present day might stretch its entire length across its tail-flap; some of these were over four feet long; yet the shelly armor of this gigantic



FISHES OF THE DEVONIAN EPOCH.

1. *Coccosteus*.2. *Pterichthys*.3. *Cephalaspis*.

crustacean was made up of so many geometrical plates, whose jointings and claspings and delicately fretted finish are worthy of all admiration.† Here, too, lived and roamed fishes of such enormous dimensions, that each particular *scale* that covered their bodies was equal in size to a large oyster-shell.‡ Here abounded many

* *Old Red Sandstone*, p. 30.† *Ib.*, 133.‡ *Ib.*, 153.

other strange but highly organized fishes, to a description of whose complicated and often beautiful structures Hugh Miller devotes page after page and chapter after chapter with unflagging interest.

"The fishes of this period," says Professor Dana, "are of two groups—the *Selachians* or Sharks, and the *Ganoids*. The earliest species, therefore, instead of being the lowest of fishes, belong to the highest of the three grand divisions: moreover instead of being small, some of them were twenty or thirty feet long. The *Selachians* are highest among fishes even in modern seas."* Here, then, again, the testimony of geology is clear and decisive against the hypothesis of development—here come forth out of their long-sealed graves the inhabitants of the ancient Devonian, and stand up before us in their odd and fantastic forms, each to bear witness against the theory that would exclude the Creator from the world He has made, and profanely strip Him of the honor of His own works. "The argument is a very simple one," says Hugh Miller; "fishes differ very much among themselves—some rank nearly as low as worms, some nearly as high as reptiles. Now, if fish made their first appearance, not in their least perfect, but in their most perfect state; not in their nearest approximation to the worm, but in their nearest approximation to the reptile—there is no room for progression, and the argument falls. Now it is a geological fact, that it is fish of the higher orders that appear first on the stage, and that

* *Manual of Geology*, Revised Edition, p. 302.



LANDSCAPE OF THE STURRIAN PERIOD.

they are found to occupy exactly the same level during the vast period represented by five succeeding formations. There is no progression.—The infidel substitutes progression for Deity; Geology robs him of his god."*

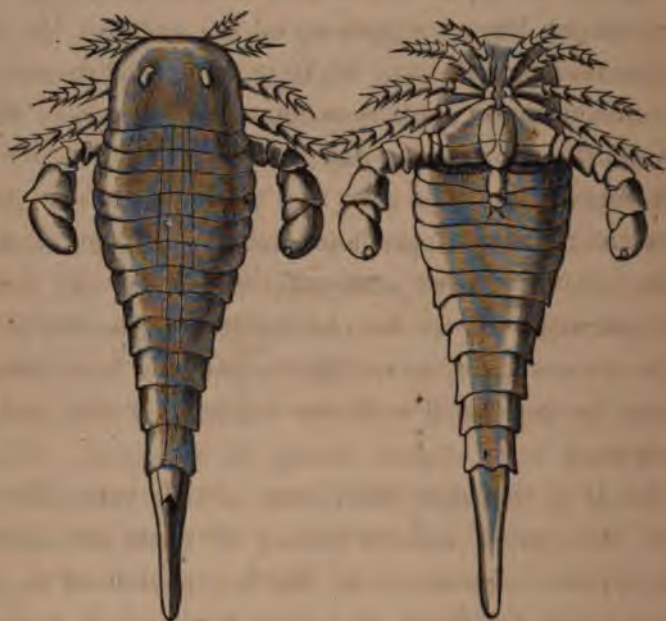
It is obvious, then, that even here, incalculably far as we have receded into the depths of the past, we discover no instance, no indication, of animal organisms declining and fading away into low and simple forms, as the Development Theory supposes; on the contrary, we find multitudes of creatures of highly complicated structures, and some of them, in all respects, equal to those of their class that live in our own day.

The next *formation* that lies before us is the great SILURIAN SYSTEM, Upper and Lower; and to explore which, we once more adventure to resume our downward journey. As we descend the long succession of its strata, we are again, as we have repeatedly been before, profoundly impressed with the vastness of the periods which must have elapsed during its deposition. When we think of the slow derivation of this multitude of layers from more ancient rocks; of their oft-repeated elevation and depression; of the long periods of repose, during which hundreds of animal species ran through their cycle of generations, and became extinct; and of the continuance of this stratifying process, until these thin beds had acquired, by union, the immense thickness of full four miles!—when we think of all this, it would seem to a creature whose "age is as an handbreadth,"

* *Old Red Sandstone*, p. 41.

that it required a duration all but eternal to deposit and build up this system alone. As an example of the high organizations found in this System of Rocks we here give a cut of the Eurypterus.

Having traversed this stupendous system, and reached a date whose distance from the fair face of the extant creation is immeasurable, let us again halt



EURYPTERUS REMIPES.

for review and examination of the fossil inhabitants which it entombs. Shall not our Development Theory now, if ever, find support and confirmation? In the estimation of the more moderate Evolutionists, *twenty-five millions of years* would scarce suffice to carry us back to the base of the Upper Silurian, while it would

require *millions more*, thirty-five millions more, according to Mr. Croll, to bring us to the base of the Lower Silurian, where we now stand.* Shall we not *here*, then, if ever, discover decisive evidence of animal organizations degenerating and fading away toward the simplicity and insignificance of larvæ or embryonic forms? No; these most ancient Silures reject the imputation as promptly and as indignantly as any witnesses we have yet met and interrogated. On surveying these fossils, we are, it is true, forcibly and at once struck with the great change which has taken place in the inhabitants of the earth, as compared with what we found in the period of the Mountain Limestone—the change, indeed, is almost total—the population is another. But nowhere, among them all, do we detect any indication of decline or degradation in structure; nowhere do we discover such an humble exhibition of animal forms as the Development Theory would lead us to expect.

“At this ancient epoch,” says St. George Mivart, “not only were the vertebrate, molluscous, and orthopod types distinctly and clearly differentiated, but highly-developed forms had been produced in each of these sub-kingdoms. Thus, in the Vertebrata there were fishes not belonging to the lowest but to the very highest groups which are known to have ever been developed, namely, the Elasmobranchs (the highly-organized sharks and rays), and the Ganoids, a group

* See *Genesis of Species*, p. 156.

for which the sturgeon may stand as a type. Among the molluscous animals we have members of the very highest known class; and among articulated animals we find Trilobites and Eurypterida, which do not belong to any incipient worm-like group, but are distinctly differentiated Crustacea of no low form. We have in all these animal types nervous systems differentiated on distinctly different patterns, fully formed organs of circulation, digestion, excretion and generation, complexly-constructed eyes and other sense organs; in short, all the most elaborate and complete animal structures built up, and not only once, for in the fishes and mollusca we have the coincidence of the independently-developed organs of sense, attaining a nearly similar complexity in two quite distinct forms.”*

“While it may be said in a general sense, that lower forms have preceded higher ones,” said Agassiz in a recent lecture, “it is not true that all the earlier animals were simpler than the latter. On the contrary, many of the lower animals were introduced under more highly organized forms than they have ever shown since, and have dwindled afterward. Animals that should be ancestors, if simplicity of structure is to characterize the first born, are known to be of later origin; the more complicated forms have frequently appeared first, and the simpler ones later, and this in hundreds of instances. The Development assertion does not bear serious examination. It is just one of those fancied results following

* *Genesis of Species*, pp. 154-156.

the disclosure or presentation of a great law which captivates the mind, and leads it to take *that which it wishes to be true* for TRUTH.*

"It is worthy of remark," says Hugh Miller, "that the Brachiopods of the Silurian periods, in which the group occupied such large space in creation, consisted of *greatly larger and more important animals* than any which it contains in the present day."†

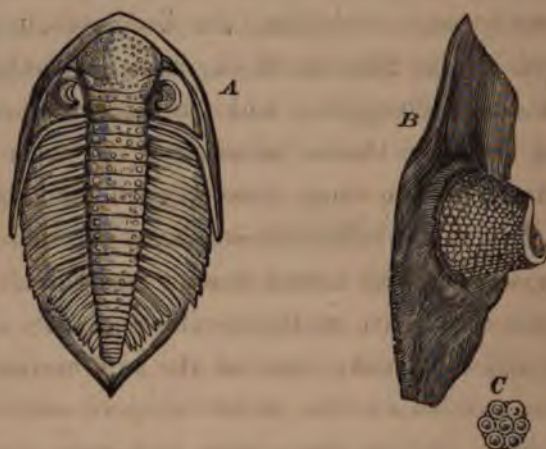
Crustaceans of very curious and complicated forms, and in no respect resembling the Trilobites, have been discovered in the Silurian Rocks both of England and America—the *Pterygotus* and the *Eurypterus*—both supposed to have been inhabitants of fresh water; quarry-men, where they were first found, from the winged form and feather-like ornament of their thoracic appendages, fancifully named them "Seraphim."

But we need not multiply illustrations: a single instance will sufficiently indicate the high animal organisms that existed in this primeval epoch—we refer to the *Trilobite*. During the middle and later periods of this era, trilobites abounded over every portion of the earth's surface; whole beds of rock were formed almost exclusively of their remains. The fossils of no less than four hundred different species have been discovered. And geologists know no more unique family of animals than that of the trilobites, or a family more unlike any which now exists. "In their nicely-jointed shells, the armorer of the middle ages might have found almost all

* Lect. XII., before *Museum of Comparative Zoology*, Cambridge.

† *Foot Prints of the Creator*, p. 209.

the contrivances of his craft anticipated, with not a few besides which he had failed to discover." They varied in size from an inch or two to a foot or more in length. The head presented, in general, the form of an oval buckler, and the body was composed of a series of articulations or rings overlapping one another, so that many of them could roll themselves up into a ball like a hedgehog. Barrande, in his interesting work on *The*



A. Trilobite. B. Left eye of a Trilobite magnified. C. A few facets of the eye more highly magnified.

Silurian System of Bohemia, has traced them through the various stages of their embryonic development, and shown that they underwent metamorphoses to some extent similar to certain insects. Their usual mode of swimming was upon their backs, and the places they chose for their abodes were far from shore, but commonly in shallow water. But the points in these creatures upon which we desire to fix special attention

are the organs of vision, which were *compound eyes*. The discovery of these eyes of trilobites in so perfect a state of preservation, after having been buried for incalculable ages in the early strata of the earth, is one of the most marvellous facts yet disclosed by geological researches. And we must regard these organs with feelings of no ordinary kind, when we recollect that we have before us the identical instruments of vision through which the light of heaven was admitted to the sensorium of some of the first inhabitants of our planet.

This very wonderful organ of vision, the *Compound Eye*, is found in many of the insects and crustaceans of the present day. On the head of a fly, for example, are two large protuberances, one on each side; these are its organs of vision. The whole surface of these prominences is covered with a multitude of small hemispheres, arranged closely and with the utmost regularity. These little hemispheres have each of them a minute transparent convex lens in the middle, each of which has a distinct branch of the optic nerve ministering to it; so that the different lenses may be considered as so many distinct eyes. Of these eyes, the beetle has on each side 3180; the common house-fly 4000; the drone-fly 7000—each of which, in all these, is capable of receiving and forming a distinct image of any object that may stand or lie before it. Leuwenhoek, having adjusted the eye of a fly for the purpose, could see distinctly in each of these diminutive lenses, though not larger than the point of the finest needle, the whole steeple of a church, which was 299 feet high, and 750 feet distant; and then

turning it toward a neighboring house, saw through many of these little hemispheres, not only the front of the house, but also the doors and windows, and could discern distinctly whether the windows were open or shut! Such a piece of mechanism transcends all comprehension, and is to be reckoned among the highest and most marvellous of animal organs.—Yet, we find this very organ in all its complexity, beauty and efficiency in the trilobites of the dim and immeasurably remote Silurian Epoch.

The form of each eye in the trilobite was that of the frustum of a cone, or of a circular pyramid with the point cut off. On these circular and tapering prominences were ranged compactly and with the utmost regularity the little facets or lenses, for three-fourths of their circumference; so that where the distinct vision of one eye ceased, that of the other began, and their combined range swept the entire horizon. The number of these lenses in different species varied from four hundred to six thousand, in each eye.—Now, when we find organs of such high complexity and perfection as these, organs as complex and perfect as any now living; and find them, not in few or rare instances, but overspreading the globe, and that at the period, so far as man has been able to discover, which marked the *dawn* of animal existence on our planet—how clear the voice, and how decisive the testimony of such a fact against the Development idea, that as we travel back in time and approach the commencement of things, animal structures must grow more and more simple, higher organisms must

insensibly fade into lower, until at length nothing is left but the merest embryos of life. We *have* travelled backward by millions of years, and millions of ages, and now stand at the base of the Great Silurian System, hard by "the foundations of the earth," and behold *even here* the perfection of animal mechanism—EYES *as complex and curious, as beautiful and efficient, as any that rejoice in the sunshine of to-day!*

Professor Buckland, of Oxford University, speaking of the trilobite eye, says: "We do not find this instrument passing onwards, as it were, through a series of experimental changes, from more simple into more complex forms; it was created at the very first, in the fulness of perfect adaptation to the uses and condition of the class of creatures, to which this kind of eye has ever been, and is still appropriate." *

Having descended through the varied and numberless strata of the four great divisions of the earth's crust, and successively surveyed their fossil inhabitants till we have reached a point where all certain traces of organized existences vanish, we may now retrace our steps and come back to the land and light of the living; and we do so with the full conviction that in all we have seen and examined, there is nothing that can with fairness be construed into a support or countenance of the theory of gradual development; on the contrary, platform after platform of animal remains, throughout our whole descent, has clearly proclaimed the Hand and Counsel of

* *Bridgewater Treatise*, Vol. VI., p. 304.

the Creator to have been concerned in its production, even to the very last we have noticed.

6. *If the Darwinian Theory be true, we ought not to find any animal forms continuing fixed and unchanged from age to age, and epoch to epoch; but all in a process of variation, more or less rapid, but ceaseless.* The very foundation of this hypothesis is, that all living organisms are subject to variation arising from the inheritance of less or more of the peculiarities of two distinct parents; from the scarcity or abundance of food; from the heat or cold, dryness or dampness of climate; from the use or disuse of certain members; from spontaneous differences, and accidental deformities. These various causes, it is said, being in operation through all time and in all regions, every organism and type of organism must be in an unceasing process of change.

Now, is this found to be the fact? Is the theory sustained and confirmed in this particular by the revelations of geology? We again say, No,—and support our answer by quotations on the point from an authority that none will suspect of being biased against Mr. Darwin or against his theory. “There are some groups of animals and plants,” says Professor Huxley, “in the fossil world, which have been said to belong to ‘persistent types,’ because they have persisted, with very little change, indeed, through a very great range of time, while everything about them has changed largely. There are families of fishes whose type of construction has persisted all the way from the carboniferous rock right up to the cretaceous; and others which have lasted through almost

the whole range of the secondary rocks, and from the Lias to the older tertiaries. It is something stupendous this—to consider a genus lasting without essential modifications through all this enormous lapse of time while almost everything else was changed and modified.”* The same authority tells us that some few animals that flourished in the remote epoch of the Chalk Formation have come down across all the ages of ages that have since elapsed so identical and unchanged as “not to be even distinguishable from living species. The *globigerena* of that period is not different from that of the present day; and the same may be said of many other *Foraminifera*. The Snake’s head Lamp-shell (*Terebratulina caput Serpentis*), which lives in our English seas, abounded in the Chalk Seas.”†

“The Shark of the Devonian and Carboniferous formations differs no more from existing Sharks than these do from one another.”‡

“The highest living group of reptiles, the Crocodile, is represented at the early part of the Mesozoic epoch, by species identical in the essential characters of their organization with those now living.”‡

Principal Dawson tells us, with regard to Mollusks existing in a sub-fossil state in the Post-pliocene days of Canada, that “after carefully studying about one hundred species, and of some of these, many hundreds of specimens, I have arrived at the conclusion that they are absolutely unchanged.” “Here again,” he adds, “we

* Huxley’s *Origin of Species*, p. 139.

† *Lay Sermons*, No. IX.

‡ *Ib.*, No. X.

have an absolute refusal, on the part of all these animals, to admit that they are derived, or have tended to sport into new species." Again he says, "Pictet catalogues ninety-eight species of mammals which inhabited Europe in the Post-glacial period. Of these fifty-seven still exist unchanged, and the remainder have disappeared. Not one can be shown to have been modified into a new form, though some of them have been obliged, by changes of temperature and other conditions, to remove into distant, and now widely separated regions."*

Now, if we regard species as distinct creations, constituted with fixed limits of variation, the *persistency* of these animals in the same types and forms presents no difficulty; but how are such facts to be accounted for on the Development Hypothesis? How came these "persistent creatures" to escape all the laws of variation, all the modifying causes, which, we are told, changed all others, and advanced larvæ, into fishes, fishes into reptiles, and reptiles into birds and mammals? By what dispensation, according to this theory, has *any one species* continued from the incalculably remote Devonian or Carboniferous period to the present time so entirely unchanged, "as not to be even distinguished from living species?" Up to a certain point, these lines of animals, like others, we are informed, had been moulded by the laws of variation; for on this hypothesis, certain primitive creatures, whatever they were, continued to vary and grow and advance until they were developed into sharks and crocodiles; now what happened, what power

* *The Story of Earth and Man*, pp. 357, 358.

interposed just at the date when they reached these forms and characters, to prevent any further variation, so that they remain the same unto this day? How has it come to pass, that neither through *inheritance*, though they have passed through myriads of generations; nor through *food*, though this must have varied both in quality and quantity ten thousand times in the course of these vast periods; nor through *climate*, though this has undergone repeated and extreme changes from tropical heat to glacial coldness, and again from glacial coldness to our own genial temperature—how has it come to pass, we ask, that through none nor all of these have this shark and this crocodile been changed, when, as is claimed, these influences have been powerfully at work on all others around them? If the Development Hypothesis be true, it must be in harmony with and explanatory of *all* the facts of nature—for a partial theory cannot be accepted, because a partial theory cannot be true. But not only does the Darwinian Theory fail to account for such facts as these, but the very principles on which it is based and built, we see, are irreconcilable with them. What shall we then say to these things? Have those potent deities of Mr. Darwin, “insensible variation” and “natural selection,” *failed* to make anything better, or anything different out of these incorrigible creatures? They certainly have had sufficient time, and a fair opportunity—but to admit their impotency here is to abandon the theory, for it proceeds on the assertion that “these suffice for the work.”*

* *Animals and Plants under Domestication*, Vol. II., p. 192.

From the large and general classes of facts which have been adduced under the four preceding propositions, we hold that we are fully warranted in the conclusion, that the revelations of geology not only refuse support, but offer a complete refutation to the theory of development. They stand forth as so many "stubborn facts," witnessing against it, and refusing to yield to its claims or to countenance its pretensions. It is not science, but speculation, for it is not based upon ascertained facts. Guesses at what has happened, conjectures of what may exist, assumptions of what will be discovered, together with inferences drawn from such hypothetical premises, are the staple materials out of which Mr. Darwin's arguments are largely fabricated. It is mainly by probabilities, fancies, analogies, odds and ends of truth and error, dexterously woven together, that even the appearance of consistency and a seeming plausibility have been given to his theory. This "the older and honored chiefs in natural science" readily perceive, and refuse to accept it—nay, "they are opposed to evolution in all its forms." "Were all the anatomists of the earth against us," says Professor Sedgewick, "we should not one jot abate our confidence. For we have examined the old records; but not in cabinets where things of a different age are put side by side, and so viewed, might suggest some glimmering notions of a false historical connection. We have seen them in spots where Nature placed them, and we know their true historical meaning. We have visited in succession the tombs and charnel-houses of these old times, and we

took with us the clue spun in the fabric of development; but we found this clue no guide through these ancient labyrinths, and, sorely against our will, we were compelled to snap its thread; and we now dare to affirm with all the confidence of assured truth, that GEOLOGY—not seen through mists of any theory, but taken as a plain succession of monuments and facts—*offers one firm cumulative argument against the hypothesis of development.*”

7. *If the theory of Development be true, and the earth has been peopled with all its varieties of living creatures by “fortuitous variations,” we ought to discover in Nature nothing like a general PLAN, nothing like a SYSTEM of animal types, nothing like SYMMETRY of organization, nothing like ORDER as to age, strength or stature—for plan, system, symmetry and order cannot proceed from accident or fortuity.*

If no designing and creating Intelligence has been concerned in peopling the world—if it owes all its differing living tenants to *accidental* accretions or *fortuitous* variations, we could look for nothing but universal disorder and confusion; we should find no distinction of classes, genera, or species, but all animals grading and fading into one another into countless and undistinguishable varieties, without any certain limits of form, size, strength, or longevity.

If “fortuity,” and not Intelligence, has been the moulding divinity of animated nature, we might reasonably expect to meet in living creatures with all manner of excesses and deficiencies, all kinds of misplaced and mispaired members—some with fewer limbs than they

needed, and some with more than they could use; some with legs on one side twice the length of those on the other; some with eyes implanted in the back of their heads instead of in the front; birds with a wing on one side and a claw on the other; sheep clothed in the bristles of hogs, and hogs warbling the songs of nightingales; hands encased in hoofs, and feet divided into fingers; fingers without joints, and legs without bones—and ten thousand other similar and dissimilar malformations.

If “accidental variations,” and not creative Intelligence, has called into existence the living tenants of our globe, we might also reasonably expect to meet with all manner of irregularities as to *age*, *stature* and *disposition*—some sheep in a flock reaching maturity in three years, while others required three-score years; cattle in one generation never rising above the size of calves, in another growing and reaching the magnitude of elephants; horses in this country passing through the entire round of their existence, like insects, within a single season, and in that country prolonging their usefulness through a whole century; the peck of a canary now proving poisonous as the fang of a viper, and now the disposition of the lamb turning out ferocious as that of a hyena; here colts and calves growing “beautifully less” till they could join the mice in their dance, and there crickets and grasshoppers increasing in bulk until rivals of the camel and able to clear a hill or a grove at a bound; and men—some growing into gigantic Brobdignagians, ten, twelve, or fifteen feet high, others remaining such diminutive Liliputians that a whole regiment of them could be drilled on a dining-table.





Nay, more than all this—If “insensible and fortuitous variations,” and not the Creator’s wisdom and power, had peopled our planet, we might in reason and consistency expect to find its surface traversed by monsters hideous as ever portrayed by an artist’s pencil, or conceived by a poet’s fancy—plundering *Harpies*, with faces of women and the bodies and wings and claws of birds, flitting among the trees—horrid *Centaur*s, half men and half horses, ranging the mountains and the forests—horned and hairy *Satyrs*, having human bodies and goats’ legs, grotesquely dancing in their retired dells—frightful *Minotaurs*, hybrids of men and oxen, devouring youths and maidens as their favorite pasture—*Arguses* fiercely glaring through a hundred different eyes—lawless *Cyclopes* sending sided glances from one huge eye-ball in the centre of their foreheads, as they skulked back to their villanous caves—two-faced *Januses*, seeing alike before and behind—giant *Briar-euses*, armed for fight with a hundred fists—nine-headed *Hydras*, wading and hissing through the marshes—watching *Cerberuses*, snarling out of fifty throats—*Cecropses*, part men and part serpents, dragging their slimy forms over sand and rocks—*Mermaids* and *Mermen*, with human snouts and fishes’ tails, frolicking among the waves or gliding through the streams—But it is not in the power of imagination to portray or conceive the confusion and monstrosities, the discords and deformities that would fill a world peopled by chance, fortuity or accident, as contemplated by the wild theory of Development.

How widely different from all this is the existing creation around us! Nature, through all her realms, clearly exhibits the *Plans* of far-reaching and all-comprehending Intelligence—design and adaptation, order, harmony and beauty, are everywhere apparent. Whether we contemplate the mutual relations and dependencies of the earth and the atmosphere, of sea and land, or of the vegetable kingdom and the animal, we discover each to be a system of admirable means to important ends, a system philosophic, complete, exquisite and beautiful in the highest degree. The more extended and thorough our study of the characters, habits and wants of animals, whether beasts or birds, reptiles or fishes, insects or worms, the more profoundly are we impressed with the wisdom and goodness displayed in their several allotments—every one being fitted for its habitation, and every habitation suited to its given occupants. In all the myriad bundles of living machinery enfolded in animal forms, there is not an organ, not a feature of construction, wherein human wisdom could suggest an improvement, or devise a change that would be for the benefit of the individual in its particular sphere and line of life. The further our researches go into the mechanism and physiology of plants and animals, louder and louder grow the calls for admiration, and the more and more absurd becomes the idea that such a rich and boundless concourse of living wonders should be the result of "*fortuitous variations!*"

"Nothing is more striking," says Agassiz, "throughout the animal and vegetable kingdoms, than the unity

of plan in the structure of the most diversified types. From pole to pole, in every longitude, mammalia, birds, reptiles, and fishes, exhibit one and the same plan of structure, involving abstract conceptions of the highest order, far transcending the broadest generalizations of man,—for it is only after the most laborious investigations that man has arrived at an imperfect understanding of this plan; and yet this logical connection, these beautiful harmonies, this infinite diversity in unity, are represented by some as the result of forces exhibiting no trace of intelligence, no power of thinking, no faculty of combination, no knowledge of time and space. If there is anything which places man above all other beings in Nature, it is precisely the circumstance that he possesses those noble attributes without which, in their most exalted excellence and perfection, not one of these traits of relationship so characteristic of the great type of the animal and vegetable kingdoms can be understood or even perceived. How, then, could these relations have been devised without similar powers? If all these relations are almost beyond the reach of the mental powers of man, and if man himself is part and parcel of the whole system, how could this system have been called into existence if there does not exist One Supreme Intelligence as the Author of all things?"*

8. *If we accept the theory of Development, we must abandon the guidance of common sense, and renounce the decisions of natural reason, for this hypothesis requires us*

* See *Essay on Classification*, Sections II., IV.

to believe that mechanisms the most complicated and ingenious in their construction, and the most efficient and important in their use, that the human mind ever contemplated, are the results of mere haphazard variations, or blind chance, or sheer accident.

The denial of *final causes* is the distinguishing characteristic of Mr. Darwin's Theory. He denies *design* in any of the organisms in the animal and in the vegetable kingdom, and teaches that even the most complicated and marvellous of them all have been formed without any object or end in view, but turned out what they are by the gradual accumulation of unintended and undirected variations of structure and instinct. This is Darwinism presented pure and simple and naked. As it may seem to some incredible that any intelligent man should seriously hold and teach such a doctrine, it becomes necessary to give proof that this is his theory. This we now offer.

First, *Proof from his own writings*. This idea pervades his works throughout. "Slight individual differences," he says, "suffice for the work, and are probably the sole differences which are effective in the production of new species."* The same sentiment is repeated in his later work on *Man*: "Slight fluctuating differences in the individual suffice for the work of Natural Selection."† Again: "If it could be demonstrated that any complex organism existed which could not possibly have been formed by numerous, successive, slight modifications, my

* *Animals and Plants under Domestication*, Vol. II., p. 192.

† *Descent of Man*, Vol. II., p. 370.

theory would absolutely break down."* Accordingly, he attempts to show how accidental variations resulted in the formation of the Eye.† It is needless to multiply quotations, seeing his whole Book, "The Origin of Species," is one continued argument against Plan, or Design, or Final Cause.

Proof from the Friends and Advocates of Darwinism. Mr. Alfred Russel Wallace, the co-discoverer, or perhaps we should say the co-inventor with Darwin of this theory, says, "His work has for its main object to show that all the phenomena of living things—all their wonderful organs and complicated structures, their infinite variety of form, size, and color, their intricate and involved relations to each other—may have been produced by the action of a few general laws of the simplest kind, laws which are in most cases mere statements of admitted facts."‡ Professor Huxley tells us that, "when he first read Mr. Darwin's 'Origin of Species,' that which struck him most forcibly was the conviction that teleology (the doctrine of Design or Final Causes) had received its death-blow at Mr. Darwin's hands."|| The same authority makes the statement: "For the notion that every organism has been created as it is and launched straight at a purpose, Mr. Darwin substitutes the conception of something, which may fairly be termed a method of trial and error." Dr. Louis Büchner's

* *Origin of Species*, p. 227.

† See *Origin of Species*, p. 146 (American Edition).

‡ *The Theory of Natural Selection*, p. 265.

|| *Lay Sermons*, p. 330.

view and understanding of this theory are thus clearly expressed: "Darwin's theory is the most thoroughly naturalistic that can be imagined, and far more atheistic than that of Lamarck; according to Darwin, the whole development (of the natural world) is due to the gradual summation of innumerable minute and accidental operations."* *Carl Vogt*, after passing some high commendations on "The Descent of Man," adds: "It cannot be doubted that Darwin's theory turns the Creator—and his occasional intervention in the revolutions of the earth and in the production of species—without any hesitation out of doors, inasmuch as it does not leave the smallest room for the agency of such a Being."† "According to the teleological theory," says *Haeckel*, "the vegetable and animal kingdoms are considered as the products of a creative agency, working with a definite design. . . . That is the view to which Darwin's doctrine is directly opposed." Such are the testimonies of the friends and advocates of Darwinism, whom we cannot suspect of doing it injustice.

Proof from the opposers of the theory. These without exception understand Mr. Darwin as denying Plan or Design in creation. It is on this ground that the *Duke of Argyll*, in his "Reign of Law," rejects and opposes the theory. *Professor Agassiz* viewed and treated it in the same light, and his strong repugnance to it grew out of its atheistical tendency. And *Professor Janet*, of the Paris Faculté des Lettres, says, "The perilous and

* *Sechs Vorlesungen über die Darwinische Theorie*, Vol. I., p. 125.

† *Vorlesungen über den Menschen, etc.*, Vol. II., p. 280.

slippery point in Darwin's theory is, when he wants to establish that a blind and designless nature has been able to obtain, by the occurrence of circumstances, the same results which man obtains by thoughtful and well-calculated industry." * In a discussion on the Credibility of Darwinism, *Rev. Walter Mitchell*, Vice-President of the Victoria Institute, makes this remark: "There is one thing which the animate, as well as the inanimate world declares to man, one thing everywhere plainly recorded, if we will only read it, and that is the impress of Design, the Design of infinite wisdom. Any theory which comes in with an attempt to ignore design as manifested in God's creation is a theory, I say, which attempts to dethrone God. This the theory of Darwin does endeavor to do." The same able and lucid authority, speaking of Mr. Darwin's theory in connection with another subject, says, "His whole endeavor has been to push the Creator farther and farther back out of view. The most laborious part of Darwin's attempt at reasoning—for it is not true reasoning—the most laborious part of his logic and reasoning, is intended to eliminate, as perfectly as any of the atheistical authors have endeavored to do, the idea of design." † "The theory of Mr. Darwin," observes Dr. Dawson, Principal of the University of Montreal, "removes from the study of nature the ideas of final cause and purpose; and the evolutionist, instead of regarding the world as a work of consummate plan, skill, and adjustment, approaches

* *The Materialism of the Present Day*, p. 174.

† *Transactions of the Victoria Institute*.

nature as he would a chaos of fallen rocks, which may present forms of castles, and grotesque profiles of men and animals, but they are all fortuitous, and without significance."*

Dr. William Fraser, of Scotland, in a work of great ability, just issued, gives his understanding of this theory in the following clear and forcible sentences—he is speaking of colors: "Not a flower in the field or the forest, not a colored shell in sea or river, that fails to illustrate or exemplify permanent principles. Even the commonest of all our early favorites shows the beautiful distribution of colors with as much exactness as the cell of the honey-bee or the whorl of the shell its meehanical lines. In his well-known work on 'The Origin of Species,' Mr. Darwin asks us to believe that these beautiful adaptations are not in the least due to design, but to the slow operations and decisions of natural selection, if indeed there can be decision without design. The very colors which man most admires are, according to this school of theorists, in no way representative of *purpose*. That the sky is blue and not scarlet, that the leaves of the landscape are not yellow and the soil not crimson, are the chance evolutions of this mysterious *something*, which has neither intelligence nor beginning of days. The mere suggestion that all this wealth of beauty in varied colors, and proportion in form, and gracefulness in movement, and the tint of the atmosphere, are in any respect an end and not accidentals, Mr. Darwin resentfully rejects.

* *The Story of Earth and Man*, p. 318.

They are with him no part of a *plan*, nor are they *intended* to please. It is really difficult to believe in the possibility of such convictions as are seriously asserted. 'Some naturalists,' he says, 'believe that very many structures have been created for beauty in the eyes of men, or for mere variety. This doctrine, if true, would be absolutely fatal to my theory.' It comes to this, that the theory we are asked to accept instead of that record in the first chapter of Genesis, is one which gives beauty without an end, laws without an author, works without a maker, and co-ordination without design."

In the same work we find this passage: "This theory requires us to believe that, without the slightest reference to any definite *End* whatever, sponges, molluscs, frogs, fishes, monkeys, men, and all other living things have, in the turmoil of ages, been assigned, by Natural Selection alone, all their varied proportions and spheres. It requires of us to believe, against all the evidence which confronts us, that there is no *design* whatever in the manifold structures of plants and animals; and none in those bodies of ours, so fearfully and wonderfully made. It requires us to believe that man has been evolved, not in conformity with any purpose, but merely amid the sequences of events, by insensible degrees, and after innumerable experiments and failures. All organized existences are meaningless results."*

It is sufficiently evident, then, from the testimony of both friends and foes, that the theory of Darwin denies

* *Blending Lights*; pp. 88, 89, 104, 106.

all *plan* and *design* in this material world, and teaches that all we behold and study and admire in the whole wondrous realm of nature, are the results of accidental variations, or blind chance.

The absolute absurdity of such a theory will, perhaps, be best presented and best appreciated by the consideration of a few specific facts.

(a) The earliest animated beings, of which Mr. Darwin has been able to catch a glimpse, were the little marine creatures already mentioned, "leathery sacks," cleaving to the ledges and fragments of rocks in the primeval seas; from these, after a long period—no one knows or can know how long—came fishes; the first of these, we are told, were of very simple organization, without any specific means or members to move from place to place. Long—no one knows or can know how long—did they again struggle for existence in this helpless condition. But at length a better day is destined to dawn upon them—they are to be furnished with *Fins*. And how are these limbless creatures to acquire these means of locomotion? On this wise—A little rugosity or roughness, by chance, occurs on the side of a fortunate individual; this proves advantageous in swimming, as it affords a point of resistance to the water; by repeated use, it amounts to a small process. A fair beginning now is made—this process is transmitted to posterity; it is preserved and transmitted again—variations and improvements continually accumulating with the flow of time, until at last it is developed into a perfect fin, with bones, muscles and covering all complete. This, it might be thought, is

marvel enough to be produced by "fortuitous variations"—but behold a second and a greater. While all this is going on, a similar rugosity makes its appearance on the other side of the animal—not farther back nor farther on, not higher, not lower, but, as could be wished, at a point just exactly opposite the first; and this by another series of minute variations, all sheerly accidental, yet, wonderful to relate, corresponding in all particulars and at every stage of transmission to the former series until it reached its consummation in a perfect fin and an exact mate for the former! Now, the once limbless fish has a pair of fins; but they are situated so near one extremity of the body, that it needs another pair at a suitable distance from the opposite extremity in order to balance itself with ease and propriety. And lo, still by accident—accident fourfold wonderful and happy—rugosity for a third and a fourth time appear, precisely at the proper points of balance, and like the former pass through a series of variations and transmissions, until, after the lapse of ages, both reach the form and functions of perfect fins as before! It was after some such manner as this, we are gravely told, that fish advanced and improved and came into possession of a complete set of fins, the most admirable instruments for instant and rapid motion in water that the human mind can conceive.

But the wonder ends not here—By the magic of the same "fortuitous variations," these fins were again converted for birds into *wings*, clothed with down and shooting out graceful and gorgeous feathers; for carnivorous beasts into *paws*, armed with bent and destructive

claws; for oxen and horses into a *solid foot*, encased in strong and horny hoofs; and for man into a *hand*, an instrument so complex in its parts, yet so beautifully formed; so fine in its sensibility, yet so vigorous in its action; so quick in its movements and yet so delicate in its touches, that it stands unrivalled as a mechanical excellence. All this effected by *fortuitous* or *accidental* variations! The humble believer in the Bible is often scoffed at as the victim of credulity; but nothing within the lids of that sacred book makes a demand for the hundredth part of the credulity that it requires to receive such a theory as this.

(b) Up to a certain period in the history of our globe, animal parents suckling their young was a thing unknown. How, then, on the Development Hypothesis, originated this wonderful and happy function? How were the *Mammary Glands* or breasts first called into existence, and into operation? How came the young capable of and addicted to the practice of sucking? Happy fortuity again! At an unknown date, in an unknown region, and through an unknown cause it happened (*i. e.*, evolutionists assume that it happened) that the conditions of physical nature underwent an unfavorable change. In these circumstances, the young of a certain animal, ready to starve, naturally nestled up to its mother, and, by accident, its mouth rubbed against a little sebaceous or fatty prominence on her side; this, in its hungry condition, it licked—again it did the same—presently it did something more, it attempted to suck it, drawing therefrom a drop of half-

nutritious fluid—thus gratified, the operation was repeated, and with the same result. This novel intercourse between parent and offspring, once commenced, was not suffered to fall into desuetude. Both the saba-ceous prominence and the propensity to suck it were transmitted—nobody can tell how—to be improved by the practice of the next generation; this transmission and improvement were repeated, and again repeated, until, in the process of generations, what originated in a pimple ended in swelling mammæ yielding a copious flow of sweet nutritious milk, and what began with the young in an accidental touch deepened into an ineradicable instinct for sucking. Happy concurrence! Wonderful fortuity! The young creature that could thus call into existence and into operation so excellent a fountain of nourishment, and initiate so effectual a process to extract it, it must be admitted, was justly entitled to the distinction of being “the fittest to survive.” Let not the reader, however, suffer his imagination to carry him back to look for this notable creature among the quadruped inhabitants of the earlier or of the later Tertiaries, for the credit of this ingenious discovery certainly and solely belongs to a biped of the very last formation—the Author of *The Origin of Species*.

But let us review and examine this extraordinary account of the origin of mammals. The act of extracting milk from the mammæ or breasts is quite a complex and difficult pneumatic operation, and closely resembles, in part, the action of an air-pump. The young creature in this act must empty the mouth entirely of air by the

simultaneous action of several distinct sets of muscles; the atmosphere then pressing on the whole external surface of the secreting organ forces the milk through its numerous channels till they all meet and discharge their contents through the nipple into the vacuum created in the mouth; and from thence, still without admitting the air, the milk is conveyed by another system of muscles to the gullet and the stomach. Now, supposing an infant born into the world without the faintest instinctive propensity to nurse, in what way would the mother go to work to induce it to put all these muscles into proper action, or to teach it this difficult art? Would there be the slightest hope of her succeeding before the helpless little one would famish and die? Is it credible, then, that the half-starved young of a brute, without instruction, without help, without skill, and without a glimmer of instinct to impel or to guide it, would live to learn such an operation, and to learn it, too, before a mamma or a teat was in existence on which it could practice? And waiving this difficulty, is it credible that the young of any animal was ever saved from starvation by sucking a drop or two of scarcely nutritious fluid from "an accidental hypertrophied cutaneous gland" of its mother? Above all, is it credible, is it conceivable, that such complicated and admirable organs as the mammary glands could be produced through such means? Such an attempt to account for the mammal functions of animals is thoroughly unsatisfactory—is, indeed, absolutely absurd. And yet the men, who are far too great *philosophers* to receive

the Scripture account, that the All-wise and Almighty God created every animal after its own kind, can believe all this, when there is not so much as one fact, or even the shadow of a fact, for its foundation!

(c) Let us take another example, and one of a somewhat different character. To the Fish Class of animals belong about a dozen kinds, grovelling at the bottom of the sea, or in the slime of rivers, which are possessed of the astonishing faculty of collecting and wielding at their pleasure the most subtle of all the powers of nature—they can actually shoot out lightning to repel their enemies or to kill their prey. For this purpose, the *Electric Ray* or Torpedo, for example, is provided with a battery closely resembling, but greatly exceeding in the beauty and compactness of its structure, the batteries contrived by man, whereby he has now learned to make the Laws of electricity subservient to his will. In this living battery of the Torpedo, there are no less than 940 hexagonal columns, like those of bees' comb; and each of these is subdivided by a series of horizontal plates, which appear to be analogous to the plates of the Voltaic Pile. The whole is supplied with an enormous amount of nervous matter; four great branches of which are as large as the animal's spinal cord, and these spread out in a multitude of thread-like filaments round the prismatic columns, and finally pass into all the cells—an arrangement altogether strikingly similar to that by which an electric current, passing through a coil and round a magnet, is used to intensify the magnetic force.*

* See Prof. Owen's *Lects. on Comp. Anat.*, Vol. II.—*Fishes*.

Here then are exhibited clearly and in effective operation all the mysteries which have been gradually unfolded by laborious study and innumerable experiments, from the days of Galvani to those of Faraday and Tyn-dall. Here are displayed the most perfect knowledge of and conformity to diverse and complicated natural laws; here we have an intricate apparatus not only most effective for generating electric force within the animal's body, but also having as clear a reference to its effect on the nervous systems of other animals, as the message transmitted by an electric telegraph has to the person for whom it is sent.

Now, this most wonderful organ of the Torpedo, consisting of thousands of distinct and dissimilar parts—columns, plates, coils, cells, muscles, ligaments—all united and combined with unerring skill into the most scientific mechanism that can be conceived—*all this*, according to the Development Theory, is the product of a series of accidents, or fortuitous variations, occurring intermittently and accumulating insensibly through indefinite ages! Such an idea not only contradicts all reason, but confounds all imagination; and seriously to propose it for the acceptance of intelligent persons is little less than an attempt to perpetrate an outrage on their common sense. Take a bushel of letters, and pour them into the mouth of a cannon, and then fire it, and blow them into the air—and sooner might we expect to find these letters fallen on the ground in such an order as to compose “Adam’s Morning Hymn,” or Euclid’s demonstration of his “Forty-seventh Proposi-

tion," than to find such scientific mechanisms, as these living batteries, built up by accidental or fortuitous variations. Indeed, here, the vigorous and vivid imagination of Darwin himself seems utterly baffled, and is forced to make the acknowledgment—"It is impossible to conceive by what steps these wondrous organs have been produced."* And no other man can conceive how, on his hypothesis, mechanisms such as these could have been brought into existence.

There is not an organ or an object with which the human mind is acquainted that more clearly or certainly manifests INTELLIGENCE, and intelligence of the highest order, than do these living electric batteries. Here are means as clearly *employed* and *adapted* to accomplish ends, as the mill is to grinding corn, or the loom to weaving cloth. Here is unquestionable *knowledge* of the existence and universal presence of electricity, a fact utterly unknown to man until these latter days. Here is obviously displayed a perfect *understanding* of all the laws that govern the accumulation and discharge of this mysterious element. Here is exhibited the most consummate *skill* in the subordination of these various and complicated laws to a most difficult and curious purpose. Here are diverse exquisite *adjustments* made in perfect accordance with all those laws, as well as with the laws and properties of animal tissues. Here is as evident a *selection* of materials on the ground of their properties, as of the metals and acids employed by

* *Origin of Species*, 6th Ed., p. 150.

man for his batteries. Here is a clear *comprehension* of the nature of electricity, and of its effects on the nervous organs of those animals against which it should be discharged. Here is thorough *acquaintance* with the mysteries which man has been able to unfold only after long and laborious study. Here, in short, is *scientific mechanism*, which, when contrived by man, was announced and heralded through the world as a triumph of his genius.—And all this we are gravely taught by Evolutionists to ascribe to blind, aimless, “fortuitous variations”!!

(d) We select our next illustration of the absurdity of the Development Hypothesis from a set of facts differing from all the foregoing—the transformation of insects. Let us follow the BUTTERFLY through the several stages of its existence. “Our starting-point is a diminutive and almost invisible egg; from this comes a worm, scarce an inch long at maturity. After spending its appointed days in this prone and lowly form, it languishes; refuses to eat; ceases to move; becomes wrapped in a silken shroud; this soon changes into a dusky crust; and in this, as in its coffin, it remains apparently dead. The time of its sepulture, usually six or seven months, having passed away, it begins to acquire new life and vigor; presently it bursts open its coffin cell, and comes forth; no longer, however, an offensive, crawling worm, but changed and fashioned into a beauteous butterfly, furnished with limbs and wings, and decked in down of purple and gold. It now takes rank with a new and superior race of beings; it mounts the air, ranges from

flower to flower, rises in exhilarating flights towards the glorious orb of day, rejoicing in its new and splendid existence."*—Look again at the more wonderful transformation, if possible, of the SITARIS, a species of beetle. This insect, unlike the butterfly, instead of at first appearing in its grub stage, and then, after a time, putting on the adult form, is at first active, and furnished with six legs, two long antennæ, and four eyes. After living in this form for a definite period, and subsisting on the eggs of other insects and whatever else is congenial to its taste, it begins to languish and change; it presently loses its eyes, legs and antennæ; and becoming thus rudimentary, it sinks into an ordinary grub-like form; but it does not close its existence in this humble condition. After the lapse of the proper time, it undergoes another transformation, and acquires a new set of legs, eyes, etc., all complete, and emerges into the form and habits of a perfect beetle!—That such processes as the above should have arisen by the accumulation of minute accidental variations in structure and habit is absolutely incredible, for there is not only an utter inadequacy, but also an utter incompatibility between the cause assigned and the results observed. Desperate, indeed, must be the desire to rid the world of its Maker's presence, that can be willing to transfer its management to such a figment as this theory.

(e) To the foregoing examples we shall now add one or two taken from the human system, for according to

* *Science and the Bible*, p. 470.

the theory of evolution, Man, no less than the brute creation, is the product of "fortuitous variations" and "natural selection." Out of the many marvellous mechanisms that at once present themselves, we select first the ORGANS OF SPEECH. These are mainly situated within the cavity of the mouth. In order to ready and accurate utterance the mouth itself must be so constituted that its several parts shall be capable of assuming a distinct configuration for every word and every sound. The proper muscles must bring instantaneously the jaws, the teeth and the lips into their precise position. Each syllable of articulated sound also requires for its utterance a specific action of the tongue; and to qualify this member for its marvellous office, its muscles are required to be so numerous, and so implicated with one another, that they cannot be traced by the minutest dissection; yet all must be so arranged that neither their number, nor their complexity, nor the entanglement of their fibres, shall in anywise impede its motion, or in any degree render its action uncertain. And nothing is more remarkable in all the living world than the variety, quickness and precision of motion, of which the tongue is capable. How instantaneously are its positions assumed, and how instantaneously dismissed—how numerous are its permutations, yet how infallible! Besides all this, from the back part of the mouth, there must be opened a passage of remarkable construction for the admission of air into and out of the lungs; and connected with this are whole systems of muscles, some in the larynx, and without number in the tongue, for the purpose of modu-

lating that air in its passage with the requisite variations, compass and precision. And lastly, there must be a specific contrivance for dividing the pneumatic part from the mechanical, and for preventing one set of actions interfering with the other.

Nothing can exceed the exactness and perfection required in all these parts, in order to the ready, accurate and clear utterance of the mind's thoughts. "I am speaking to you at this moment," says Professor Huxley, "but if you were to alter, in the minutest degree, the proportion of the nervous forces now active in the two nerves which supply the muscles of my glottis, I should become suddenly dumb. The voice is produced only so long as the vocal cords are parallel; and these are parallel only so long as certain muscles contract with exact equality; and that again depends on the equality of action of those two nerves I spoke of. So that a change of the minutest kind in the structure of one of these nerves, or in the structure of the part in which it originates, or of the supply of blood to that part, or of one of the muscles to which it is distributed, might render all of us dumb."*

Such is the apparatus of speech—an apparatus the most complicated and yet the most perfect in its structure, the most delicate in its adjustments and yet the most infallible in its operations—an organism of inestimable advantages as well as of unfathomable consequences to man; the organism, indeed, which gives to him his power and pre-eminence over all the living

* Huxley's *Origin of Species*, p. 149.

tenants of the globe, and without which he never could attain his high intellectual and moral destiny.—And all this, we are seriously called upon to believe, is, after all, but a mere *accidental occurrence*, but the product of mere “fortuitous variations” and “natural selection”! To say nothing of the teleological aspect of the question, of God’s purpose or man’s destiny, the improbability that such sublime mechanisms as the organs of human speech have been produced by “accidental variations” is so great, that the idea is at once reduced to a sheer absurdity. Nor is this absurdity relieved in the slightest degree by saying that these organisms were not brought about at once, but by infinitesimal variations carried on through unnumbered ages. No matter how minute or insensible the variations, and no matter through what cycles of ages they have been going on—here are, come they when or how they might, what are indisputable and convincing evidences of MIND; here are contrivances, productions, adjustments and combinations, which nothing less than infinite *knowledge*, *skill*, and *power* could have produced. This is the instant and instinctive decision of natural reason.

We have spoken of the *improbability* of such organs as those of speech being the product of “accidental variations”—let us attempt to illustrate this. We wish to find produced by accident, say, so common a thing as a pebble, but one combining in itself a few simple qualities. Let us enter upon the search. On yonder sea-shore are myriads and myriads of pebbles of every description of rock, that have been rolled and “insensibly” fashioned

under the advance and retreat of "fortuitous" waves for unnumbered ages. Now, for a certain purpose, we want one that is perfectly *round* or *spherical*—what is the probability of finding it? Not great; still among so many, it is possible that such a one may be discovered. But to suit our purpose, it must also be just three-fourths of an inch in *diameter*: this additional qualification greatly lessens our prospect of success, for if one perfectly spherical could be found, a thousand to one, if it would be of this exact size. Moreover, it is necessary to our object, that its *weight* be exactly one ounce: this again vastly further reduces our probability of finding what we wish, for though of the right form and size, yet another thousand to one, if it should prove also of this precise weight. Again, it is required for the end we have in view that it be of pink *color*: this quality added to the foregoing three, as is obvious, lessens the faint degree of probability left a thousand times still further. Once more, the pebble we are seeking must possess precisely such a degree of *hardness*, neither less nor more; and this, at length, sinks our probability below appreciation. Lastly, the pebble we are in quest of must possess *magnetic properties*—to find this in connection with all the foregoing—of this, there remains absolutely no degree of probability. Though the ocean waves, and volcanic fires all the world around, have been ceaselessly at work on countless millions of rock fragments of every quality for millions of ages, yet we may safely say that there has not yet been produced by this fortuitous operation a single pebble combining in itself

these half-a-dozen simple qualities.—This, then, may serve to convey an idea how utterly improbable it is that even *one* of the exquisite and complicated parts that enter into the construction of the organs of speech has been produced by “fortuitous variation,” for there is not one of these but possesses *more* than half-a-dozen distinct and essential qualities. And if the production of one part fortuitously, be so utterly improbable, what human language, or human numbers, can express the improbability of all the diversified parts being thus produced, and produced simultaneously, and produced, too, in mutual and perfect adaptation for harmonious and infallible action endlessly varied !

(*f*) We select for our next and last example the *EYE*, the choicest and most enchanting of all our corporeal endowments. It is not necessary to our purpose to give a formal and detailed description of the anatomy and physiology of this organ—it will be sufficient to glance at a few of its prominent and remarkable features.

(1.) The eye is constructed with evident and distinct reference to an element without itself, and an element the most ethereal and sublime in all nature—*Light*.

(2.) Its form is that of an ellipsoid, just that shape, out of ten thousand possible shapes, which mathematicians have demonstrated to be the only one that can refract all the rays of light to a single surface, and thus afford distinct vision.

(3.) It consists of a great number of parts, differing in their material and their forms and their offices, yet so related and so skilfully combined as to compose an

instrument of exactness and efficiency which no human effort can hope to approach, far less to attain.

(4.) To qualify it for its important function, the eye is encompassed with three membranes or coats; the outermost (sclerotic) is exceedingly firm and dense, and gives to it the mechanical support necessary for the preservation of its form; within this is another coat (choroid) whose main office is to supply it with nourishment, and by its black interior to absorb any scattered rays that might interfere with clear sight; within this again is spread the retina, the only part of the whole nervous system susceptible of impression from luminous rays.

(5.) The interior of the eye is occupied with three transparent media, called the aqueous, the crystalline, and vitreous humors; these form lenses of different character for the convergence of the rays of light, so as to meet and form pictures of external objects on the retina.

(6.) The retina is an exceedingly thin and delicate layer of nervous matter supported by a fine membrane, and is spread in the form of just such a concave and just at such a distance behind the lenses as are indispensable to distinct vision—any change, even the slightest, in the amount of this distance, or in the character of this concave, would infallibly result in a defective sight.

(7.) The lenses are formed of substances having different refractive powers, so as to prevent the light from being resolved into prismatic colors, and so give to objects a tinge which does not belong to them; for

this purpose the crystalline lens is constructed of an infinite number of concentric layers, which increase in their density as they succeed one another from the surface to the centre; by this means an optical difficulty is overcome in a way quite inimitable to human art.

(8.) The perforation of the Iris, or the Pupil, by which the light is admitted into the eye, is a very remarkable arrangement: the Iris is composed of two layers of contractile fibres; the one, forming concentric circles; the other, disposed like radii between the outer and inner margin; when the former act, the pupil is contracted; when the latter act, the breadth of the Iris is diminished, and the pupil is, of course, dilated. By this refinement of ingenuity, acting spontaneously, the quantity of light admitted into the interior of the eye is regulated, and accommodated to the extreme sensibility of the retina. What structure can be more artificial, or what machinery can be more exquisite in its operation, than this!

(9.) The eye is furnished with a complete system of muscles, six in number, by which it can be rapidly turned at will in any direction, so as to vary the field of vision, as necessity, pleasure or fancy may dictate. Four of these act by direct contraction, turning the eye up or down, to the right or the left; the other two serve to give it an oblique direction—one of these is remarkable for the artificial manner in which its tendon passes through a cartilaginous pulley in the margin of the orbit, and then turns back again to be inserted into the eye-ball to give it a degree of rotation on its axis; in

no other way could the tendon pull in the required direction.

(10.) In the hollow of the orbit, above the eye, is planted the lachrymal gland, a self-acting fountain of tears, which gently spread and flow over its pellucid surface, to lubricate its motions, and to wash away any particle of dust, or other irritating substance that may happen to be introduced.

(11.) Each eye is furnished with a well-contrived conduit to carry off the superfluous moisture into the nostril, to be evaporated with the warm breath.

(12.) Each eye is furnished with lids, like curtains, to close over it in sleep, to wipe it, to cut off the outer rays of light that would confuse vision, and to protect it against blows, or dust, or any other means of injury; and the rapidity with which these lids open and close is past all admiration.

(13.) The eye is furnished with a most delicate yet most efficient system of pulleys and ligaments, that without a moment's delay alter its convexity and relative position of parts, so as to adapt it to perceive objects at different distances—an operation slowly and with some difficulty effected by man in his telescope by lengthening or shortening the tube.

(14.) The eye is endued with a refinement and acuteness of perceptivity that is utterly beyond the reach of human imagination. This will plainly appear from a moment's reflection upon the manner in which different colors are produced. According to the present and generally accepted theory, light consists in vibrations

excited by the sun in a medium called *Luminiferous Ether*, and impressions of different colors are produced in the eye by the different rates and lengths of these vibrations, as reflected by various bodies or substances. Thus to produce *Red Color*, the ray of light must give 37,640 undulations in an inch, and 458,000,000,000,000 in a second; *Yellow* requires 44,000 in an inch, and 535,000,000,000,000 in a second; *Blue*, 51,110 in an inch, and 622,000,000,000,000 in a second. Such facts at once astonish and overwhelm the mind. The minuteness and velocity expressed by these high numbers immeasurably transcend the sublimest efforts of the imagination, and yet they do not transcend the power of the eye to distinguish as readily between them as between color and color, for it is the difference in these rates that constitutes color. How supremely exquisite, then, this endowment of the eye!

(15.) And what is equally if not more wonderful than the preceding fact, the eye is provided in some inscrutable manner with the means of expressing the indwelling mind itself, so that one may look into its crystal depths, and see love and hatred, intellect and stupidity, scorn and wrath, horror and shame, and almost every spiritual state and action.

(16.) Even the position occupied by the eye is worthy of special remark—wisdom could not have chosen a better, being the most elevated part of our frame, so as to command the most extensive and the least obstructed prospect.

(17.) It is placed in the *front*, so as most readily to

apprize us of whatever may lie in the direction we proceed, as well as to preside over the movements of our feet and the manifold operations of our hands.

(18.) It is planted in a deep bony socket, where it is comparatively safe from external injuries.

(19.) It is here imbedded in a soft cushion of fat, of all animal substances the best adapted both to its repose and motion; and thus its delicate texture is not hurt by the bony walls around it, as it rests on them, or as it turns swiftly hither and thither at the bidding of the will.

Such, in brief, is the human eye—an organ scarce an inch in diameter, yet embracing all these wonderful parts, these marvels of optical laws, and these contrivances of inimitable skill! If anything could deepen our impression or enhance our admiration of its structure, it would be, perhaps, to look at and see this living mechanism in the very act of taking its enchanting pictures. And fortunately, it is not very difficult to secure this pleasure. If the sclerotic and choroid coats be carefully removed from the posterior part of the eye of an ox or a horse, leaving only the retina, and the eye thus prepared be placed in a nicely fitting hole in the window-shutter of a darkened room, with the cornea on the outside, all the objects of the external scene will be beautifully depicted, in all their details, on the retina.

Suppose all this to be done in a darkened chamber on the summit of Bunker Hill Monument. Here we find a landscape ten miles square, embracing a large city with its harbor and shipping, streets and parks, thronged roads

and converging railways, brought into our prepared and adjusted eye, and clearly exhibited on the canvas of its retina within a space not exceeding three-quarters of an inch in diameter. The multitude of objects which the scene contains are all preserved, are all discriminated in their magnitudes, positions, figures, colors, and even *motions*. The clouds drifting along the blue heavens, the departing ships with their whitened sails, the green waves curling and breaking upon the shore, the approaching trains enveloped in dust, the trees bending before the breeze and the vanes trembling on the spires, vehicles hurrying along the streets and men darting across to escape them—these, *all these*, are as really and distinctly *in motion* in our fairy picture on the retina as they are on the face of nature itself. How small the space, yet how correct the representation—how subtle the touches—how fine the lines—how ethereal the coloring—how instinct the whole with life!

This may assist us to realize what is daily and hourly effected by our own organs of vision. Few spectacles are better calculated to raise our admiration than this delicate picture, which nature, with such exquisite art, and with the finest touches of her pencil, spreads over the smooth canvas of this subtle nerve; a picture, which, though occupying a space scarce equal to a dime; often contains the delineation of a boundless scene of earth and sky, full of all kinds of objects, some at rest, and others in motion, yet all accurately represented as to their forms, colors and positions, and followed in all their changes, without the least interference, irregu-

larity, or confusion. And when the shades of night have gathered round—every one of those countless and stupendous orbs of fire, whose light, after traversing immeasurable regions of space, at length reaches our eye, is collected on its narrow curtain into a luminous focus of inconceivable minuteness; and yet this almost infinitesimal point shall be sufficient to convey to the mind, through the medium of the optic nerve and brain, a knowledge of the existence and position of the far distant luminary, from which that light emanated years, perhaps, ages before.

Now, what shall we say to the plan and structure of an instrument such as this, comprising within such limited dimensions such vast and exquisite powers, of which the perceptions comprehend alike the nearest and most distant objects, and take cognizance at once of the most minute portions of matter and of bodies the largest in magnitude, and can appreciate motions slow as the lengthening shadows or swift as those of the descending sunbeams! If here we have not a congeries of amazing contrivances and adaptations, there is, there can be nothing wonderful. If *intelligence* can be evinced by any disposition, or combination, or co-operation of material substances, INTELLIGENCE, and INTELLIGENCE of the highest order, clearly manifests itself in the construction of this organ. If science does or can indicate *mind*, the highest principles of Geometry, Optics, Chemistry and Mechanics, as applied in the structure of the eye, demonstrate it to be the production of a MIND familiar with all the principles which sustain and regulate the universe.

Yet, the advocates of the Development Theory would have us dismiss all such ideas as idle reveries, and believe that this wonderful optical instrument (with all other animal organisms) is the product of "fortuitous variations and natural selection,"* or "the result of a method of trial and error worked by unintelligent agents"!† What is this but asking us to abandon the guidance of common sense, and to renounce the instinctive decisions of natural reason? As well might they call upon us to believe that the *telescope*, by which the astronomer explores the heavens, is the result of fortuity or accident; for the eye and this instrument are made precisely upon the same principles, both being similarly adjusted to the laws by which the transmission and refraction of rays of light are governed. And there is precisely the same proof that the eye was constructed for vision as there is that the telescope was made for assisting it. If we are compelled to acknowledge that the one has been contrived and formed by intelligence, we must admit that the other has been also. The telescope and the eye are instruments of the same kind. "The end is the same; the means are the same. The purpose in both is alike; the contrivance for accomplishing that purpose is in both alike. The lenses of the telescope, and the humors of the eye bear a complete resemblance to one another, in their *figure*, their *position*, and in their *power over the rays of light*, viz., in bringing each pencil to a point at the right distance from the lens;

* Darwin.

† Huxley.

namely, in the eye, at the exact place where the membrane is spread to receive it. How is it possible, under circumstances of such close affinity, and under the operation of equal evidence, to exclude contrivance from the one; yet to acknowledge the proof of contrivance having been employed as the plainest and clearest of all propositions in the other?" *

We have said, *equal evidence*—the truth is, the evidences of designing intelligence evinced in our organs of vision vastly transcend both in number and degree those in the telescope. The admirably ingenious means employed in the Eye to rectify the *aberration of sphericity*, and the *Chromatic aberration*, together with those which adapt the eye to different *degrees of light*, and to the *different distances of objects*, † clearly demonstrate this organ to be the production of One fully acquainted with the most secret laws of Optics; and we may add, that it was only by studying and imitating *these most skilful arrangements in the eye*, that man was enabled to correct very serious defects in his telescope, and to bring it to its present degree of perfection. Can we, then, without the grossest and most wilful inconsistency, admit that this, the *defective copy*, is the work of intelligence, and yet assert that that, the PERFECT ORIGINAL, is “the result of a method of trial and error worked by unintelligent

* Paley's *Natural Theology*, Chap. III.

† For the exposition of the principles on which these corrections and adaptations are made, we must refer to works which treat professedly on Optics.

agents"? But the absurdities of this theory do not stop here.

According to this hypothesis, no animal, nor even any member or organ of an animal, has been made for *any definite purpose or end*—all are fortuitous productions. This, as before abundantly proved, is not a forced inference from the doctrine, but what its advocates formally and expressly assert. Thus Professor Huxley—"Organisms vary incessantly; of these variations the few meet with surrounding conditions which suit them and thrive; the many are unsuited and become extinguished.—Organisms are like grapeshots of which one hits something and the rest fall wide.—An organism exists because, out of many of its kind, it is the only one which has been able to persist in the conditions in which it is found."* Thus every animal is produced, and every animal continues to exist, simply by chance. All living creatures, and all their parts, are the products of "fortuitous variations;" hence, all the members and organs of our bodies are "fortuitous" members and organs, and not made for any specific ends or purposes—that is, our eyes were not made for seeing, nor our ears for hearing, nor our hands for handling, nor our teeth for masticating, nor our feet for walking; but having been fortuitously produced, something was found for them to do! The common sense of mankind must see and say that such notions are too absurd to be made more so by argumentation. This is precisely the doctrine

* *Lay Sermons*, No. 13.

of the old heathen, Lucretius, who was wont to say that the organ fortuitously produced suggested its own use—"quod natum est id procreat usus;" which Prior, with his usual good sense, has thus humorously exposed—

"Note here, Lucretius dares to teach,
 (As all our youth may learn from Creech,)
 That eyes were made and could not view,
 Nor hands embrace, nor feet pursue;
 But heedless Nature did produce
 The members first, and then the use.
 What each must act was yet unknown,
 Till all was moved by chance alone.
 As if one built a country seat,
 Then found the walls not fit to eat,
 Or 'nother plant, and wondering see
 No books nor medals on his tree.
 Yet poet and philosopher
 Was he, who durst such whims aver.
 Blessed for his sake be human Reason,
 Which came at last, though late in season!"

"The evolutionist doctrine," says Principal Dawson, "is one of the strangest phenomena of humanity. It existed, and most naturally, in the oldest philosophy and poetry, in connection with the crudest and most uncritical attempts of the human mind to grasp the system of nature, but that in our day a system destitute of any shadow of proof, and supported merely by vague analysis and figures of speech, and by the arbitrary and artificial coherence of its own parts, should be accepted as philosophy, and should find able adherents to string on its thread of hypotheses our vast and weighty stores of knowledge, is surprisingly strange."*

* *The Story of the Earth and Man*, p. 317.

We have now pursued this bold hypothesis much further than we intended to do when we began to speak of it, and certainly far beyond what its intrinsic value or importance deserves. Looking back over the field we have traversed, it is natural to ask, Of this whole matter, the subject of so much noise and hubbub, what is the sum? Why, this—Away at an immeasurable, at an all-but infinite distance in the dim dawn of time, three *gods* stood face to face on our planet—by name, *Fortuitous Variation*, *Struggle-for-existence*, and *Natural Selection*; between them and at their feet, lay a little mass of jelly; upon this, presently, this contending trinity fell to work, each eying and watching the doings of the others. Under the undesigning hands of the *first*, the yielding mass changed form and divided into parts—through the unconscious influence of the *second*, these parts were set in array for mutual destruction, and many perished—but by the haphazard intervention of the *third*, the best were rescued. These survived, however, only to be subjected to a similar course of treatment with the original mass. So again; and so again. And thus labored on these three blind deities without aim, without purpose, without intelligence, until, after the lapse of ages which no man can number, they brought up and wrought out the little mass of jelly upon which they began, into all that is curious, or useful, or important, or beautiful in the whole existing animal kingdom. This is the Theory of Development! Now, we assert without hesitation, that there is nothing in all the vagaries of Greek or Roman, Hindoo or Egyptian

mythology, that exceeds in absurdity this extravagant theory. It truly seems more like the elaboration of a delirious mind than the product of sound and sober reason. And yet this dream of a wild and fermenting imagination is put forth as *Science*! If our faith or credulity can accept this—if with Mr. Darwin “we can find no difficulty in believing” that tadpoles can be developed into tigers; that black bears can be converted into whales; and hairy monkeys transformed into men and women, “the pride and glory of creation”—why should we hesitate to swallow whole the creed of Brahima, or to believe that the earth was hatched from an egg; that the world is standing on the back of a tortoise, that the tortoise stands on the back of an elephant, and the elephant stands on the mud? “When I listen to the language of evolutionists,” says Max Müller, “I almost imagine I am listening to one of the most ancient hymns of the Veda, and that we shall soon have to say again: *In the beginning there was the golden egg.*” Surely such a theory, like a hundred others before it, after an ephemeral existence, must become the byword of the world, and pass silently into that oblivious receptacle of things “abortive, monstrous, or unkindly mixed,” described by Milton, which,

“Upwhirled aloft,
Flew o’er the back side of the world, far off,
Into a limbo large and wide, since called
The Paradise of Fools:—to few unknown
Long after.”

It may have come into the mind of the reader long ere this, to ask, If the Development Theory is beset with

such serious and even insurmountable difficulties, how comes it to pass that any intelligent, much less scientific men should be found to hold it? For erroneous and even absurd theories to find advocates among the professedly learned is nothing new or uncommon in the history of science. Of this, any one that will take the trouble to read Professor Whewell's *History of the Inductive Sciences*, will find abundance of examples in almost every branch of human study. Nor is the fact one very difficult to be accounted for. An individual that has wholly given himself up to a chosen branch of study, through the insensible but sure influence of mental habit, presently comes to view everything in the light of this study; he becomes largely a man of one idea—he has eyes only for *one class of facts*. And if, concerning these, he has conceived some special theory of his own, fascinating or novel or promising in its character, and has become engrossed with it, growing fondness for the child of his own brain, presently, renders him alike blind and insensible to whatever may have a bearing contrary to his wishes.

“So he that once hath missèd the right way,
The further he doth go, the further he doth stray.”—*Spenser*.

Great names are not always a warrant for the truth or correctness of the theories they advocate. “It should not be forgotten that there is no opinion so extravagant and wild that it has not been at some time embraced by philosophers, by men of science; and it should not be forgotten that a very large part of the doctrines held in science in past times have been found by more accurate

observation to be absurd, and have been dropped by the way, and are now numbered and classified with the huge monsters—themselves not less monstrous—the ichthyosaurians and the plesiosaurians of the old geological periods of our world's history."*

While the present advocates of the Development Theory put forth in general a bold front, it is certain that they are by no means themselves so thoroughly convinced of its truth. They differ widely among themselves on many important points; indeed hardly any two of them agree. Lamark differed from all who preceded him. The author of *The Vestiges of Creation* left Lamark behind. Mr. Darwin sets both of these gentlemen aside. M. Tremaux controverts all the reasonings of Darwin in favor of a new theory of his own. Lamark believed in spontaneous generation, Darwin does not. The author of *The Vestiges* expounded a law of Development, and Mr. Darwin displaces it by Natural Selection. Darwin holds that life began in the water, Tremaux repudiates this notion and asserts that the *soil* is the origin of all life. Huxley puts forth the idea that life may come from dead matter, Darwin believes that life was first breathed by the Creator into three or four low and simple forms. Darwin teaches that Man in common with all other animals is the product of Natural Selection, Wallace, his co-theorist, asserts that Natural Selection with all its resources is utterly inadequate to account for the origin and

* Barnes' *Evidences of Christianity in the Nineteenth Century*, p. 93.

structure of the human race. Thus we find the most distinguished leaders in the field at hopeless war among themselves.

Some of these great theorists evidently feel that the history and experience of the past suggest caution—suggest that in their heroic march it would not be wisdom to destroy all the bridges behind them, and so cut off every chance for retreat. Hence we hear a leader among them, Professor Huxley, hold language such as this—"I accept Darwin's hypothesis provisionally in exactly the same way as I accept any other hypothesis. Men of science do not pledge themselves to creeds; they are bound by articles of no sort; there is not a single belief that it is not a bounden duty with them to hold with a light hand and to part with it, cheerfully, the moment it is really proved to be contrary to any fact, great or small. And if in course of time I see good reasons for such a proceeding, I shall have no hesitation in coming before you, and pointing out any change in my opinion without finding the slightest occasion to blush for so doing. So I say that we accept this view (Mr. Darwin's) as we accept any other, so long as it will help us, and we feel bound to retain it only so long as it will serve our great purpose—the improvement of Man's estate and the widening of his knowledge. The moment this, or any other conception ceases to be useful for these purposes, away with it to the four winds; we care not what becomes of it!"* This assuredly is a statement whose inconsistency can be

* Huxley's *Origin of Species*, p. 145.

equalled only by the absurdities of the theory its author seeks to uphold. Here is a public instructor, after having employed all his distinguished ability and influence to propagate a doctrine of the gravest bearings among men, who then turns round and says he would not be pledged to it, nor blush to change and cast it to the winds any day for another. No man confident that his position is firm and safe can be so ready to abandon it. No man believing that what he holds is the truth can be thus willing to part with it. Such language is not consistent with *honest conviction* that the theory set forth is agreeable to truth and fact. It may consist very well with a fanciful *conjecture*, or a mere *hypothesis*—and this, in truth, is all there is of the theory of development. No impartial reader of such a passage as the above can escape the conviction, that the authors and abettors of this doctrine *do not really* believe it themselves.

The advocates of Development have all along labored to create the impression upon the public mind, that the wise and learned are for the most part with them in their views, and that the opposers of the doctrine are the ill-informed, the interested, and the bigoted and superstitious classes. This, it need hardly be said, is wide of being a correct statement—indeed, it seems very much like the old policy, that would win over adherents by representing the victory as being all but won. This, we rejoice to say, is far from being the case—so far, that the doctrine of Mr. Darwin is known to be on the wane. Of late there has been clearly manifested a disposition,

even among those who were at first taken with the theory, carefully to review it. St. George Mivart, one of the most distinguished of living naturalists, says, "Though by no means disposed originally to dissent from the theory of 'Natural Selection,' if only its difficulties could be solved, I have found each successive year that deeper consideration and more careful examination have more and more brought home to me the inadequacy of Mr. Darwin's theory. . . . In spite of all the resources of a fertile imagination, he is reduced to the assertion of a paradox as great as any he opposes."*

"It has been fashionable among evolutionists," says the author of *Pater Mundi*, "to claim in a vague way, that all the German Science and culture are in favor of the new views; but an actual search by one of our most eminent professors among German publications on the Development Hypothesis, discloses the fact that, out of some thirty works issued within a certain time, more than twenty were against the hypothesis, and these as much superior to the others in ability and in the repute of their authors, as they were in number."†

Mr. Darwin, in his last edition of *The Origin of Species*, admits that "authors of the highest eminence seem to be fully satisfied with the view that each species has been independently created." And in the same work he acknowledges that, "the transitional forms joining living and extinct species not being found—the sudden

* *Genesis of Species*, pp. 74, 75.

† *Second Series*, p. 15.

manner in which several groups of species first appear in European formations—the almost entire absence, as at present known, of formations rich in fossils beneath the Cambrian strata—are all undoubtedly difficulties of the most serious nature. We see this in the fact that the most eminent palæontologists, namely, *Cuvier*, *Agassiz*, *Barrande*, *Pictet*, *Falconer*, *E. Forbes*, etc., and all our greatest geologists, as *Lyell*, *Murchison*, *Sedgwick*, etc., have unanimously, often vehemently, maintained the immutability of species.* And in the Introduction to his *Descent of Man* he regretfully observes that “Of the older and honored chiefs in natural science, many unfortunately are still opposed to evolution in every form.” Yes, we may add, and not a few of them still bow with humility and unabated devotion before the throne of the Almighty Creator, and toward the Cross of his Son, Jesus Christ.

The Duke of Argyll holds the following unequivocal language—“The various hypotheses of Development, of which Darwin’s theory is only a new and special version, are indeed destitute of proof; and in the form which they have as yet assumed, it may justly be said that they involve such violations of, or departures from, all that we know of the existing order of things, as to deprive them of all scientific basis.”†

Agassiz—higher authority we could not quote—is equally clear and decisive in his testimony: “I wish to enter my earnest protest against the transmutation

* *Origin of Species*, pp. 289, 428.

† *Reign of Law*, p. 29.

theory," he says. "It is my belief that naturalists are chasing a phantom, in their search after some material gradation among created beings, by which the whole animal kingdom may have been derived by successive development from a single germ, or from a few germs. I confess that there seems to me a repulsive poverty in this material explanation, that is contradicted by the intellectual grandeur of the universe. I insist that this theory is opposed to the processes of nature as we have been able to apprehend them; that it is contradicted by the facts of Embryology and Palæontology, the former showing us norms of development as distinct and persistent for each group as are the fossil types of each period revealed to us by the latter; and that the experiments on domesticated animals and cultivated plants, on which its adherents base their views, are entirely foreign to the matter in hand." *

The same high authority, in a lecture recently delivered in Cambridge University, says, "That presentation of palæontological phenomena which would make it appear that the whole animal kingdom has been marshalled in a consecutive procession beginning with the lowest and ending with the highest, is *false to nature*. There is no inevitable repetition, no mechanical evolution in the geological succession of organic life. It has the correspondence of *connected plan*. It has just that kind of resemblance in the parts, so much and no more, as always characterizes intellectual work proceeding

* As quoted in *Pater Mundi*, Second Series.

from the same source. It has that freedom of manifestation, that independence, which characterizes the work of MIND as compared with the work of *Law*. I believe that all these correspondences between the different aspects of animal life are the manifestations of MIND acting consciously with intention toward one object from beginning to end. This view is in accordance with the working of our minds; it is an instinctive recognition of a mental power with which our own is akin, manifesting itself in nature. For this reason more than any other, perhaps, do I hold that this world of ours is not the result of the action of *unconscious organic forces*, but the work of AN INTELLIGENT, CONSCIOUS POWER.*

While men of the scientific ability and standing of Agassiz and Dana in this country, of Sir William Thompson and the Duke of Argyll in England, and of Milne-Edwards and his school in France, oppose the Development Theory, not only by their authority, but by their facts and arguments, we may rest assured that the advocates of this hypothesis are far enough from being so certain of their victory as they claim.

Thus far, nothing which science has discovered either contradicts or traverses the simple narrative of creation, as given in the Christian Scriptures—*And God created every living creature that moveth, after his kind.*

From the discoveries of science Christianity has nothing to fear, but everything to hope. No disclosures of the past, numerous and varied as they have been,

* Lectures before the Museum of Comp. Zoology, No. 12.

have in anywise damaged or tarnished the cause of the Redeemer; on the contrary, they have proved most efficient auxiliaries, and furnished the most glorious illustrations of the truths which He taught; and history thus warrants us to expect that whatever may yet be discovered among plants or animals, whatever may be dug from the mountains or dredged from the deep, will assuredly yield their willing tribute, and lay it meekly at His feet. The sceptical evolutionist of to-day may be confident that his new theory is going to undermine the very foundations of the Christian Religion, and may already exult in the prospect of its overthrow—and the timid believer may be alarmed by his bold pretensions, and may tremble for the result. But how vain are the expectations of the one, and how groundless the fears of the other! “It is the fiftieth time in which Christianity has seemed to the sanguine infidel and the timorous believer to be in great peril; and yet not even an outpost has been lost in this persistent warfare. Discoveries in Astronomy, Geology, Chemistry and Physiology have often looked threatening for a while; but how entirely have they melted away before brighter light and more careful study! Moreover every new assault upon Christianity seems to develop its inherent strength, and to weaken the power of its adversaries; because, once discomfited, they can never rise again. It will be time for the infidel to begin to hope, when he shall see, what he has not yet seen, a single stone struck from one of the bastions of this massive fortress by his artillery. And strange that any believer should be

anxious for the future, when the history of the past shows him that every science, which for a time has been forced into the ranks of the enemy, and made to assume a hostile attitude, has, in the end, turned out to be an efficient ally."*

II. THE ORIGIN OF MAN.

THE Scripture account of the Origin of MAN is explicit, full, and peculiar. He is declared to be a *creation* of God—to be the product of a *distinct and immediate* act of His almighty power. He is, moreover, said to be the Creator's last and crowning work in this lower world.

As we peruse the first great chapter of the Bible it is very noticeable that when we come to the opening of the account of Man's creation, the inspired narrative assumes a different tone, and employs a loftier and more solemn diction, as if expressly to intimate his pre-eminent distinction above all the living creatures which had been produced before. Instead of simply issuing His *fiat* as heretofore, the Creator is now described as if stepping forth from the throne of His glory for the accomplishment of a deed of special importance. To denote the superior nature and high destiny of the being about to be created, the ELOHIM is represented as proceeding to the work with measured deliberation, and as the result of Self-consultation—*And God said, Let us make man.* And to indicate the direct and peculiar derivation of the creature *man*, not only is his *body*

* Hitchcock's *Philosopher and Theologian*.

described as having been formed immediately by the hand of God, but his *spirit* also as having been given by the breath of the Almighty—*And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life, and man became a living soul.*

The creature called into being in this wonderful manner, we are told in very explicit terms, was of a *character* differing widely from all other living things which God had made—*So God created man in HIS OWN IMAGE, in the IMAGE OF GOD created he him: male and female created he them.* This image consisted not in figure and lineaments of body, for God is a Spirit, and no material form can bear any similitude to Him. This image and likeness lay in the soul of man, and consisted in its capacities to resemble God in His moral attributes—in a *mind* capable of true knowledge, a *conscience* to distinguish right and wrong, *affections* to delight in holiness, and a *heart* to love God with all its powers. These mental and moral endowments elevated man incomparably above every living creature which the Lord God had made, and as the Creator purposed and declared, gave him *dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moved upon the earth.*

The Sacred Record, moreover, relates to us the melancholy fact, that the first human pair did not long retain this their original high position and holy character; that through temptation they sinned and fell, and transmitted to all their posterity their own sinful and fallen likeness; and that thus *by one man sin entered into*

the world, and death by sin. Such is the Inspired History of the origin of the human race.

Widely and essentially different from all this is the account which evolutionists undertake to read to us. The theory of these, as before stated, makes no distinction between man and the brute as to his origin; he, like all else that live and move upon the earth, according to this doctrine, has been evolved *originally* from some low and larval form, but *proximately* from the Old World branch of the *Simiadae*, or monkey family. "Man," says Mr. Darwin, "is certainly descended from some ape-like creature—a hairy quadruped, furnished with a tail and pointed ears, probably arborial in its habits, and an inhabitant of the old world." "The early progenitors of man," he says again, "were no doubt well covered with hair, both sexes having beards; their ears were pointed and capable of movement; and their bodies were provided with a tail, having the proper muscles. The males were provided with great canine teeth, which served them as formidable weapons."† Such is the picture drawn of our early parentage; and though expressly admonished by Mr. Darwin that "we need not be ashamed of it," yet we are forced to confess that, to us, it is alike horrid and repulsive, and that we involuntarily shrink from it!

The Scripture account of Man's origin, and that offered by the Development Hypothesis, are thus radically and essentially different; to reconcile them, therefore, is

* *Descent of Man*, Vol. II., p. 372.

† *Ib.*, Vol. I., p. 198.

hopeless, is impossible; and we hesitate not to pronounce the futile attempts that have been put forth to do so as being *simply profane*; for of which of the descendants of a "hairy quadruped" can it with any propriety be said, that it was brought forth *in the image and likeness of God*? Or, at what point in its lineage or history did the ape-like creature *sin, and fall, and bring condemnation upon all its offspring*? But we refrain from pressing such questions—they are unseemly.

No theory could easily be imagined more fundamentally adverse to Christianity than that of development as presented by Mr. Charles Darwin; its direct and undisguisable bearing is to sap and remove the very foundation upon which it rests. Man's original righteousness, his fall into sin and condemnation, and his redemption by the death of Christ—these three are the fundamental doctrines of the Christian religion. But this theory does away with *all these*. By ascribing the origin of man to a hairy brute, it denies his primitive righteousness; by denying his original righteousness, it denies his fall; by denying his fall, it denies his redemption therefrom by the death of Christ. It denies that primitive man had any knowledge of or belief in "a God hating sin and loving righteousness." It is evident, then, that under the garb of Development we discover an insidious but deadly foe to our holy religion, that hopes, by thus gnawing at its roots, to see its whole fair form wither away from the earth.

This theory, moreover, denies to man an immortal spirit, and blots out all his hope of future existence. If,

as this hypothesis asserts, there has descended from the monkey a series of advancing and improving creatures, each succeeding one less ape-like and more human-like, until at length they developed into man; it follows that man's *mind* has been derived from the monkey mind, just as his body has been derived from the monkey body—the two animals, man and the monkey, are in their nature identical; there is, there can be, no essential difference. This Darwin openly avows, and persistently attempts to prove. Man, according to his doctrine, is merely a more perfectly developed animal. Hence we are landed in this dilemma—we must either hold that all monkeys have, like men, immortal souls; or, that all men, like monkeys, are soul-less and doomed to eternal extinction—conclusions alike repugnant to religion and to common sense.

The representation that man has descended from “a hairy quadruped” is not less degrading in its influence than it is repulsive in its aspect and profane in its spirit. This attempt to give man a brutish origin, not only lowers him in the scale of being, but in his own estimation, and tends inevitably to injure and degrade his character. Let our children once be brought to believe that they are but brothers and sisters to the apes, instead of being the offspring of God, and that their forefathers were but beasts in the forests, and it will take away from them the most powerful of motives to act a rational, worthy and noble part on the great stage of human life.

This materialistic doctrine, we have sufficient reasons

to believe, is already beginning to produce its direful but legitimate fruits. Denying, as it does, all real distinction between man and beast, between the spirit of the brute that goeth downward and the spirit of man that goeth upward, and thus banishing from the mind and heart all sense of *accountability*—who but must see that its direct and certain tendency is to take away the fear of God from before the eyes of men, to break down all the restraints arising from an apprehension of His righteous judgment, and to extinguish all hope, all desire of His approbation and reward in a future state? Those teachers who would make man believe that he is a brute in his origin, take the most effectual course to make him a brute in his character; and they are, we doubt not, in no trivial measure accountable for the reckless disregard and violation of law, human and divine—the low estimate set on human rights and human life, and the frequent dark and shocking crimes—that have so marked the past few years.

Of all this it will be sufficient proof to quote a single paragraph from Mr. Darwin's work. Speaking of Natural Selection as affecting civilized nations, he says: "With savages the weak in body or mind are soon eliminated (*i. e.*, are killed off), and those that survive commonly exhibit a vigorous state of health. We civilized men, on the other hand, do our utmost to check the process of elimination; we build asylums for the imbecile, the maimed and the sick; we institute poor-laws, and our medical men exert their utmost skill to save the life of every one to the last moment. There is reason to be-

lieve that vaccination has preserved thousands, who from a weak constitution would formerly have succumbed to small-pox. Thus the weak members of civilized societies propagate their kind. No one who has attended to the breeding of domestic animals will doubt that *this must be highly injurious to the race of man*. It is surprising how soon a want of care, or care wrongly directed, leads to the degeneration of a domestic race; but excepting in the case of man himself, hardly any one is so ignorant as to allow his worst animals to breed." * Thus plainly are we given to understand, that in building asylums for the imbecile, the maimed, the sick; instituting poor-laws; administering vaccination—endeavoring thus to prolong the lives of our fellow-creatures—we are directing our care wrongly, and causing a degeneration of the race of man! Who would wish, who would consent, to have such a passage as the above introduced into our national School Books? Could any sentiment or principle be inculcated more ruinous to morals, or more opposed to the spirit of Christianity, or more withering to all the kindly feelings of our nature? And that dark hint at "elimination"—what more effectual encouragement could be given to the commission of Infanticide and Foeticide, crimes already so shockingly prevalent?

Again: This theory which would identify the human race with the brutes of the forest, and avers them to be subject to the same laws and doomed to the same fate, tends to work *national* as well as individual evil. When

* *Descent of Man*, Vol. I., p. 161.

sinful and selfish and sensual beings, as fallen humanity are found to be, are taught, as they are by the theory of Natural Selection, that it is a law of nature to *Man*, no less than to beast, that the strong should trample down and exterminate the weak, and that when they are successful in doing so, they are only inheriting their legitimate destiny as "the fittest to survive"—what results, what fruits could be looked for from such a doctrine but high-handed injustice, oppression and cruelty, on the one hand, and suffering, slavery and extermination on the other? Is not the tendency, if not the design, of evolutionism, therefore, to favor the strong, and to crush the weak—to elevate the favored few, and to depress the less fortunate multitude? Is not its very spirit that of the tyrant's maxim, "Might makes right?" Certain it is that, *The Survival of the Fittest*, and LIBERTY, FRATERNITY AND EQUALITY can never be inscribed on the same banner.

Though the arguments presented in the preceding chapter, against the transmutation of Species in general, are of course of equal force against this transformation of monkeys into men; nay, are of tenfold greater force, for the gulf which divides man from the monkey is incomparably broader and deeper than the intervals which separate the different species of the inferior creatures—yet, conclusive as those arguments are, the evil bearings of the theory of Natural Selection, as above indicated, render it necessary to consider particularly the more specific facts urged by evolutionists in support of the idea that man is descended from the monkey.

The arguments offered in support of the theory that the human race is descended from the ape race are mainly based upon the fact that there exist certain points of similarity between the bodily structure of man and that of the ape. "It is notorious," says Mr. Darwin, "that man is constructed on the same general type or model with other mammals. All the bones in his skeleton can be compared with corresponding bones in a monkey, bat, or seal. So it is with his muscles, nerves, bloodvessels, and internal viscera. The brain, the most important of all the organs, follows the same law, as shown by Huxley and other anatomists." *

This statement, in a general and qualified sense, is correct. All admit that man has an animal nature; and there is no question that his bodily frame is constructed on the same general plan as that of other mammal creatures. How could it be otherwise? Like other mammals, man is made to live and move and have his being on the earth, in connection with and in dependence on its material productions. He is made to eat and drink, to rest and sleep, like them, and to perform numerous other functions precisely similar to theirs. Hence his bodily structure and theirs of necessity must exhibit many points of resemblance, more or less remote. The animal frame of man, all acknowledge, has been moulded after the same general type as other mammals; but that affords no grounds for the assumption that they are of the same origin. All steam-engines are con-

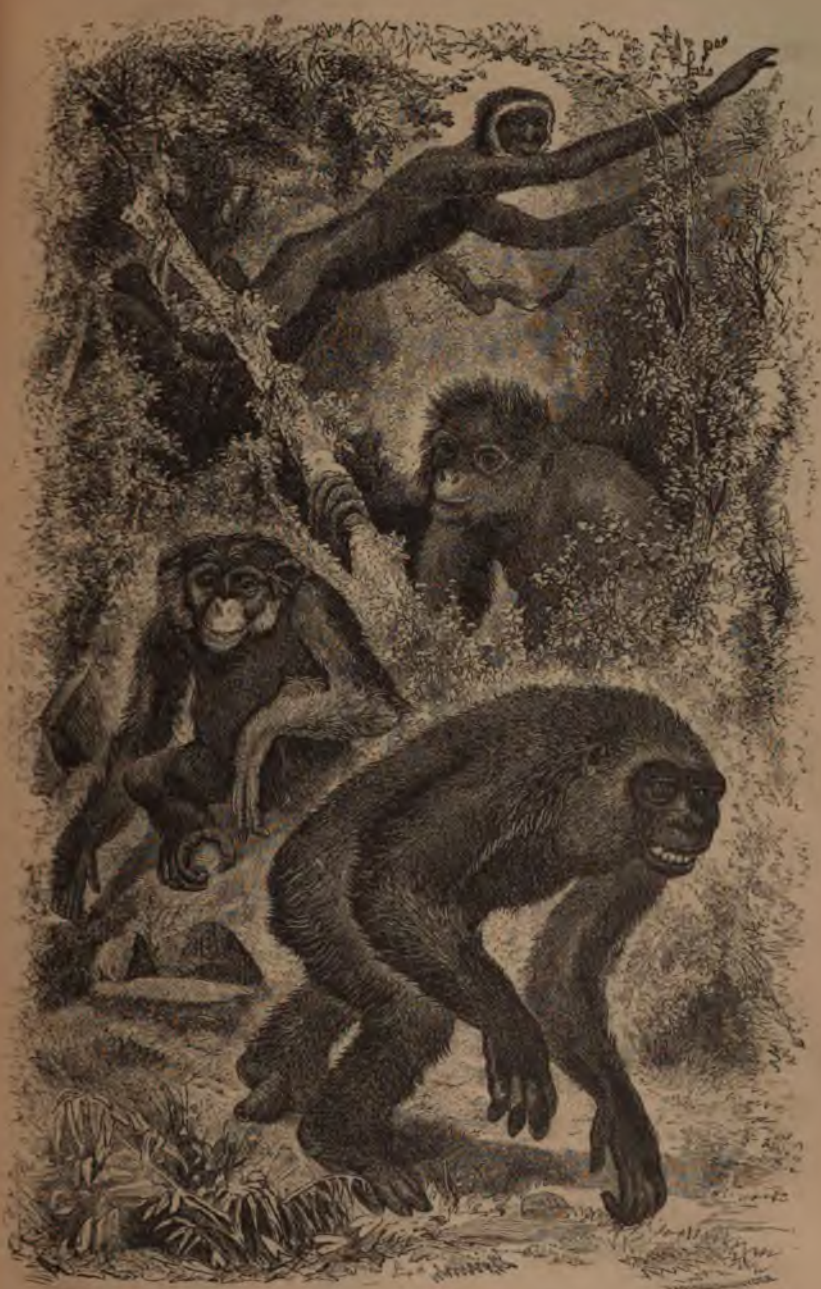
* *Descent of Man*, Vol. I., p. 10.

structed on the same general principle, and have many parts that can be compared one with another; but that is no evidence that the Stationary Engine in the factory, and the Locomotive on the Railroad, have been made in the same workshop, much less that both have descended from one and the same engine parent. Man's corporeal frame resembles that of the ape, not because he is descended from the ape, but because he requires for his habitat and special mode of life precisely such a bodily structure as he possesses. If this argument of evolutionists is, in itself, worth anything, it will prove quite as conclusively that the ape is descended from man—indeed, a little more so, for to degenerate from a higher to a lower is by far the more prevalent course of nature.

Of extant or living monkeys, which the advocates of Development designate as being *man-like*, there are four tribes, the Gibbon, the Orang, the Chimpanzee, and the Gorilla; and of these they have chosen the last for comparison with man, as coming upon the whole the nearest to the human form, and for this reason serving their purpose best. We shall, therefore, confine our observations for the most part to the same.

Between Man and the Gorilla there exist many points of wide and distinctive *difference*, and to these we now wish to call the attention of the reader.

1. *Difference in general aspect and habits.*—The Gorilla is an inhabitant of the equatorial regions of western Africa. It is a savage-looking quadruped, thickly covered with coarse black hair, excepting the face and ears.



GIBBON.
CHIMPANZEE. GORILLA. ORANG.

1

1

1

Standing on its hind legs, which it sometimes awkwardly does, it is found to measure nearly five feet in height. Across the shoulders it is disproportionately broad, the girth of its chest being almost equal to its height. The face is of a dark brown color, almost black. The face is very wide and of great elongation. The eyes are very large; the nose broad and quite flat, with wide open nostrils. The cranium is low and of very small capacity; the muzzle broad, and exhibiting a frightful array of teeth; the lips are coarse and prominent, the under one being remarkably elastic and mobile, and, when the animal is enraged, hangs down over the chin. On the head is a high ridge, or crest of hair, resembling mane, which meets a transverse ridge of the same running round from the back of one ear to the other. The animal has the power of moving the scalp freely forward and backward, and when angry is said to contract it strongly over the brow, thus bringing down the hairy ridge, and pointing the hair forward, so as to present a most ferocious aspect.

The neck is short, thick, and hairy; the arms are very long, reaching some way below the knee; and the hands are huge, the thumb being much larger than the fingers.

The gait is shuffling; the motion of the body, which is never upright as in man, but bent forward, is rolling from side to side; it advances by thrusting its arms forward, resting the hands on the ground, and then giving the body a half-jumping, half-swinging motion between them.

The dwelling of the Gorilla, if such a thing can be called a dwelling, consists simply of a few sticks and leaves, supported by the crotches and limbs of a tree; it affords no shelter from rain or sunshine, and is occupied only at night.

The Gorilla is an exceedingly ferocious animal; it never runs from man, and is an object of terror to the natives. It is said, that when the male is first seen, he gives a terrific yell that resounds far and wide through the forest. His enormous jaws are widely open at each expiration. He always rises to his feet when making an attack, though he approaches his antagonist in a stooping posture.

Though he never lies in wait, yet, when he hears, sees, or scents a man, he immediately utters his characteristic cry, prepares for an attack, and always acts on the offensive. The cry he utters resembles a grunt more than a growl, and is similar to the cry of the Chimpanzee, when irritated, but vastly louder. His preparation consists in attending the females and young ones, by which he is usually accompanied, to a little distance. He, however, soon returns, with his crest erected and projecting forward, his nostrils dilated, and his under lip thrown down, presenting an aspect of indescribable ferocity; at the same time he utters his usual yell, designed, it would seem, to terrify his antagonist. Instantly, unless he is disabled by a well-directed shot, he makes an onset, and, striking his antagonist with the palm of his hands, or seizing him with a grasp from which there is no escape, he dashes him on the

ground and lacerates him with his tusks. Such is the power of his great jaws that he can, it is said, instantly crush the barrel of a musket between his teeth; and his exceeding savage nature is sufficiently indicated by the implacable desperation of the young, which, so far as tried, have proved utterly untamable.

Such are the character and aspect of the Gorilla—*man's nearest ally!* Now, who that, in the exercise of simple common sense, contemplates this animal, but must instinctively ask, What is there about such an ugly and ferocious beast that can be regarded as resembling man? What is there in this prone and savage quadruped to be compared to the erect and graceful and commanding figure of man? What is there in its brutish face that makes the most distant approach to the human countenance, with its expressive eye, its intellectual features, its affecting tear, and the charm of its smile? No more than in the grim visage of a Grizzly Bear.

2. *Difference in bodily structure.*—Man differs from the Gorilla, not simply in external appearance and expression, but also in the proportions and conformations of the parts and members composing his whole system—osseous, muscular and nervous.

There is a marked disproportion in the comparative length of the *Arms* and *Legs* of man and those of this ape. Professor Huxley takes the following method to show this—if we call the length of the spinal column in man 100, then the length of his arm will be 80, of his leg 117, of his hand 26, and of his foot 35. If in like

manner we take the Gorilla's spinal column to be 100, its arm will be 115, its leg 96, its hand 36, and its foot 41. For more ready comparison we place these numbers side by side:

| | Spine. | Arm. | Leg. | Hand. | Foot. |
|---------------------------|--------|------|------|-------|-------|
| Man | 100 | 80 | 117 | 26 | 35 |
| Gorilla | 100 | 115 | 96 | 36 | 41 |
| Difference per cent. | | 35 | 21 | 10 | 6 |

Man differs from the Gorilla in the form of the *Spine*. This, in man, is marked by two graceful and important curvatures, both of which are absent in that of the Gorilla; and while he has but twelve pairs of *Ribs*, this ape has thirteen.

Man differs from the Gorilla in the shape and size of the *Pelvis*. In human beings the haunch bones are expanded in order to give support to their viscera during their habitual erect posture, and to afford a place of attachment to the great muscles which enable them to assume and preserve that attitude. In both these respects the bony girdle of the hips in man differs widely from that of this ape which goes on all-fours.

Man differs from all apes in the structure of the *Foot*. Apes of every kind have the great toe of the foot so constructed as to be able to oppose the other toes, as does the thumb the fingers, instead of being parallel with them, and exclusively adapted for supporting the body on the ground. And all apes are quadrupedal in their mode of progression.

Man differs from the Gorilla in the adaptations of the *Hand*. While the hand of each is made after the same plan and contains the same number of bones, yet the two

instruments differ widely. "The muscular system of the thumb alone," says M. Gratiolet, "establishes a profound difference, and testifies to an *adaptation* to very different uses." The one is a clumsy paw, whose use is limited to climbing trees and plucking wild fruit, the other an organ so adapted and correlated to reason and inventive genius that "by its aid the earth is weighed, and the distance of the sun is measured."

Man differs from the Gorilla in the form and growth of the *Teeth*. "The teeth of man," says Professor Huxley, "constitute a regular and even series—without any break and without any marked projection of one tooth above the level of the rest; a peculiarity which is shared by no other living mammal. The teeth of the Gorilla, on the contrary, exhibit a break or interval, termed the *diastema*, in both jaws. The size of the eye-tooth in the Gorilla being so great that it projects like a tusk, far beyond the general level of the other teeth. The roots of the false molar teeth in the Gorilla, again, are more complex than in man, and the proportional size of the molars is different. The Gorilla has the crown of the hindmost grinder of the lower jaw more complex, and the order of eruption of the permanent teeth is different; the permanent canines making their appearance before the second and third molars in Man, and after them in the Gorilla. Thus the teeth of the Gorilla exhibit marked differences from those of Man in their relative size, number of fangs, and order of appearance."*

* *Man's Place in Nature*, p. 98.

Man differs from the Gorilla in the possession of a *Chin*; this feature is quite wanting in the Gorilla, as also in the Orang and Chimpanzee.

"The differences between Man's *Skull* and that of the Gorilla are truly immense. In the latter, the face, formed largely by the massive jaw-bones, predominates over the brain case, or cranium proper: in the former the proportions of the two are reversed. In the man the occipital foramen, through which passes the great



OUTLINES OF THE SKULLS OF AN ADULT CHIMPANZEE, OF A NATIVE AUSTRALIAN, AND OF AN AVERAGE EUROPEAN.

a. The Glabella; b. the Occipital protuberance.

nervous cord connecting the brain with the nerves of the body, is placed just behind the centre of the base of the skull, which thus becomes evenly balanced in the erect posture; in the Gorilla it lies in the posterior third of that base. In the Man, the surface of the skull is comparatively smooth, and the supraciliary ridges or brow prominences usually project but little—while, in the Gorilla, vast crests are developed upon the skull and

the brow ridges overhang the cavernous orbits, like great penthouses."*

Man differs immensely from the Gorilla also in the *Capacity of the Cranium*, or brain case. The collections of Dr. J. B. Davis and Dr. Morton give the following figures as the average internal capacity of the cranium in the chief races of man :

| | |
|--------------------------|----------------------|
| Teutonic Family | 94 cubic inches. |
| Esquimaux | 91 " " |
| Negroes | 85 " " |
| Australians | 82 " " |
| Bushmen | 77 " " |
| Finns and Cossacks | 98 " " |
| Average | 87 $\frac{5}{8}$ " " |

The largest Gorilla cranium examined, according to Professor Huxley, measured $34\frac{1}{2}$ cubic inches; the smallest 24 cubic inches; these give us for the Gorilla cranium an average of $29\frac{1}{4}$ cubic inches. We see, hence, that the average human brain is exactly *three times* the size of the average Gorilla brain. Professor R. Wagner, who carefully weighed more than 900 human brains, states, "that it may be safely said, that an average European child, of *four years old*, has a brain twice as large as that of an adult Gorilla."

Man differs from the Gorilla in the formation of the *Brain itself*. Scemmering enumerates as many as fifteen important anatomical differences. The ape brain exhibits but a skeleton map of the human brain. The two differ both in the disposition and proportions of their convolutions; and these convolutions, in the middle and

* *Man's Place in Nature*, p. 93.

frontal lobes, are developed, M. de Quatrefages informs us, in an inverse order of time.

The great French anatomist, Cuvier, held that the distinctions between Man's organism and the organism of the highest among the beasts are of such magnitude and importance that the human race cannot be classified as belonging to the same "Order" with any other creature, but must be regarded as constituting an "Order by itself." And Professor Owen, at the present time, holds the same opinion.

And Professor Huxley, though an avowed friend of the Development Theory, finds himself constrained to make this acknowledgment—"I must guard myself against a form of misunderstanding, which is very prevalent, viz., that the structural differences between Man and the highest apes are small and insignificant. Let me take this opportunity, then, of distinctly asserting, on the contrary, that they are great and significant; that every bone of a Gorilla bears marks by which it might be distinguished from the corresponding bone of a man; and that in the present creation, at any rate, no intermediate link bridges over the gap between *Homo* and *Troglodytes*. It would be no less wrong than absurd to deny the existence of this chasm. . . . The structural differences between Man and the man-like apes certainly justify our regarding him as constituting a Family apart from them."*

To the above we may add the testimony of another

* *Man's Place in Nature*, pp. 123, 124.

distinguished naturalist, whose acknowledged abilities well qualify him to pronounce an opinion in this matter. M. de Quatrefages, Professor of Anthropology in the Museum of Natural History at Paris, in a late work on this subject,* has entered very fully into the question of man's descent from the ape. He has summed up the contents of a multitude of contemporary works on this subject, and has delivered this as his confirmed opinion—that, *in an anatomical point of view, the transmutation of the ape into Man is a perfect impossibility.*

“Man and apes in general,” says he, “present a most striking contrast. The former is a *walking animal*, who walks on his hind legs; all apes are *climbing animals*. The whole locomotive system in the two bears the stamp of these two very different intentions; the two types, in fact, are perfectly distinct.

“The very remarkable works of Duvernoy on the Gorilla, and of MM. Gratiolet and Alix on the Chimpanzee, have fully confirmed this result as regards the man-like apes—a result very important, from whatever point of view it is looked at, but of still greater value to any one who wishes to apply *logically* Darwin's idea. These recent investigations prove, in fact, that the ape type, however highly it may be developed, loses nothing of its fundamental character, and remains always perfectly distinct from the type of man; the latter, therefore, cannot have taken its rise from the former.

“We may place, side by side, for the sake of com-

* *Rapport sur le Progres de l'Anthropologie*, published in 1868.

parison, as was done by M. Pruner-Bey, the most striking characteristics in man and in the man-like apes. As the result we ascertain this general fact—that there exists an *inverse order* of the final term of development in the sensitive and vegetative apparatus, in the systems of locomotion and reproduction.

“In addition to this, this *inverse order* is equally exhibited in the series of phenomena of individual development.

“M. Pruner-Bey has shown that this is the case with a portion of the permanent teeth. M. Welker, also, has demonstrated that the modifications of the base of the skull, that is, of a portion of the skeleton which stands in the most intimate relation to the brain, take place inversely in the man and ape. The *sphenoidal angle* diminishes from his birth in man, but, on the contrary, in the ape it becomes more and more obtuse, so as sometimes to become entirely extinct.

“But there is another fact which is still of a more important character: it is that this inverse course of development has been ascertained to exist even in the brain itself.

“In man and the man-like ape, *when in an adult state*, there exists in the mode of arrangement of the cerebral folds a certain similarity on which much stress has been laid; but this resemblance has been, to some extent, a source of error, for the result is attained by an *inverse course of action*. In the ape, the convolutions, which form the middle lobe, make their appearance, and are completed, before the anterior convolutions which form

the frontal lobe. In man, on the contrary, the frontal convolutions are the first to appear, and those of the middle lobe are subsequently developed.

"It is evident that when two organized beings follow an inverse course in their growth, the more highly developed of the two cannot have descended from the other by means of evolution.

"Embryology next adds its evidence to that of anatomy and morphology, to show how much in error they are who have fancied that Darwin's ideas would afford them the means of maintaining the monkey origin of man.

"In the face of all these facts, anatomists, however they may differ on other points, are agreed on this, and have equally been led to the conclusion, that there is nothing that permits us to look at the brain of the ape as being like unto the brain of man smitten with an arrest of development, or, on the other hand, the brain of man as a development of that of the ape; that the study of animal organism in general, and that of the extremities in particular, reveals, in addition to a general plan, certain differences in shape and arrangement which specify two altogether special and distinct adaptations, and are incompatible with the idea of any filiation; that in their course of improvement and development, apes do not tend to become allied to man, and conversely the human type, when in a course of degradation, does not tend to become allied to the ape; finally, that no possible point of transition can exist between man and the ape, unless under the condition of inverting the laws of development.

"Gratiolet's investigations of the brain of the ape, normal man, and small-brained individuals, have shown that the similarities spoken of by evolutionists are purely fallacious. The human brain differs the more from that of the ape the less the former is developed, and an arrest of development could only exaggerate this natural difference. The idiot, however low he may be reduced, is not a beast; he is nothing but a deteriorated man.

"What, we may ask, is brought forward by the partisans of the simial origin of man in opposition to these general facts? I have done my best to seek out the proofs alleged, but I everywhere meet with nothing but the same kind of argument—exaggerations of morphological similarities which no one denies; inferences drawn from a few exceptional facts which are then generalized upon, or from a few coincidences in which the relations of cause and effect are a matter of supposition; lastly, an appeal to possibilities from which conclusions of a more or less affirmative character are drawn.

"The theory of the ape origin of man, therefore, is nothing but pure hypothesis, or rather nothing but a mere *jeu d'esprit* which everything proves utterly baseless, and in favor of which no solid fact has as yet been appealed to."

Such is the conclusion reached by Professor Quatrefages, and with whom substantially agree Vicq-d'Azyr, Serres, Duvernoy, Gratiolet, Alix, Welker, Bert and Pruner-Bey, men whose scientific researches place them in the first rank of the Naturalists of the day.

3. *Intellectual difference*.—High as the bodily structure of Man places him above the Gorilla, his intellectual capacities place him immensely higher still.

The mental powers of Man differ from those of the Gorilla and brutes in general, not simply in *degree*, as evolutionists claim, but in *kind*. Man possesses intellectual faculties, of which even the germs are entirely wanting in them.

(1.) The Gorilla and other animals possess a system of nerves, and through which their bodies are endowed with *Sensation*—they can feel pain and pleasure, hunger and thirst, etc.

(2.) The Gorilla and other animals have the power of *Sensible Perception*—they can see, hear, smell and taste.

(3.) The Gorilla and other animals have the capacity of *Association*—they can and do associate danger, pain, or pleasure with certain objects, actions, or circumstances.

(4.) The Gorilla and other animals have the faculty of *Memory*, in a stronger or weaker degree.

Under the governance and direction of *INSTINCT*, *these* suffice to guide them in all the duties and necessities of their lowly condition of being. All that we see in them, or witness them accomplishing, may be satisfactorily accounted for by these faculties only; no other power or powers need be called in to explain any of their doings. In addition to these, however, we find in Man two other and higher mental capacities, of which the most advanced brute is entirely destitute.

(5.) Man possesses *Self-consciousness*—he is capable of

reflecting in thought upon the sensations and perceptions which he receives from without, and of recognizing himself as perceiving and thinking.

(6.) Man has the power of *Reason*—he is qualified to ask What? Why? When? Wherefore? concerning his sensations, perceptions and associations, and to infer conclusions from them.

These last two kinds of mental action are voluntary and deliberate operations of the mind, and distinguish INTELLECT from Instinct. Mere brutes may possess the first four, and possess them in a high degree of perfection; they may have various feelings, and receive images of objects single or combined or in association, and act instinctively therefrom, in the manner most conducive to their welfare. But they are utterly incapable of the last two kinds of mental actions; they cannot reflect on their own existence; they cannot inquire into the nature or causes of objects or events; they do not know that they know; they do not know themselves in knowing. In other words, they are destitute of Reason. Hence the mental faculties of Man differ in *kind* from those possessed by the highest type of animals.

Had apes possessed even the germs of a *rational* nature, such germs would certainly long ere this have so developed as to have produced in their actions or mode of life unmistakable evidence of reason, seeing they have existed through such a prodigious lapse of time, for, according to Mr. Darwin, apes nearly as large as man ranged over the continent of Europe as far back as the Upper Miocene Period. But the descendants of those

apes are apes still, and nothing more than apes. If these animals possessed the faculty of reasoning—that is, if they were capable of reflection and comparison, of inquiring into causes and effects, of planning and combining efforts, in however humble a degree, they would certainly during these countless ages have made some progress in knowledge and action, some advancement in their mode of utterance and communication, some improvement in their habitations, in their way of securing food, in their methods of defence and attack. But nothing of this kind appears to have taken place in their whole history; neither age, nor observation, nor experience has advanced them one iota; what they were in the Miocene Period they are in the present day. The very germ of reason being absent, they are uneducable and unimprovable. In all the specially-selected instances of Mr. Darwin, when we sift and analyse them, we can find not a tittle of evidence to show that brutes possess the reasoning faculties, properly so called, in any degree however humble.

Here, then, lies an immeasurable gulf between Man and the highest ape. Man—*all men*, however degraded their social condition, even Fuegians and Bushmen and Australians,* have self-consciousness and the power of

* Mr. Darwin himself tells us that all the essential mental characters of civilized man are found in the very lowest races—"The American aborigines, Negroes, and Europeans differ as much from each other in Mind as any three races that can be named, yet I was incessantly struck, whilst living with the Fuegians on board the 'Beagle,' with the many little traits of character, showing how similar their minds were to ours; and so it was with a full-blooded Negro with whom I happened once to

reasoning; they possess the gift of articulate and rational speech; they have a perception of right and wrong, of truth and falsehood; and they are capable of unlimited improvement in knowledge and action.

To realize the enormous difference and distance between Man and his nearest ally, the Gorilla, we need but view them in a few points of contrast. Man, by his intellect, clothed in warm and comely and often elegant garments; the Gorilla, devoid of intellect, remaining covered only with the black coarse hair nature has given it. Man cultivating abundant fields of herbs and fruits and grain; the Gorilla roaming in uncertain search for the wild productions of the forest. Man driving his harnessed horses, or riding in his steam carriage, or sailing in his magnificent ship; the Gorilla ever hobbling along on all-fours through woods and fens and thickets. Man dwelling in his clean and commodious house, often in a palace of marble and cedar; the Gorilla crouching on a rude nest composed of a few twigs and leaves, exposed to dews and rains, winds and sunshine. Man counselling and concerting with his fellows, and uniting their strength in disciplined armies to defend their homes and to repel their enemies; the Gorilla, incapable of counsel or of concert, advancing to fight his battles singlehanded and alone. Man constructing his mighty engineerings of war, his sword and rifle and cannon, his walled forts and floating batteries; the Gorilla fur-

be intimate. I have been deeply impressed with the close similarity between the men of all races in tastes, dispositions and habits."—*Descent of Man*, Vol. I., pp. 223, 224.

nished only with his brawny arm and naked tusks.* Man enjoying the refining pleasures of argument and eloquence, of poetry and music, of statuary and painting; studying the history, geography and geology of the globe; understanding the chemistry of its materials and the laws of its elements; calculating its dimensions and periods and velocities; measuring the distance of the sun and moon and stars; rising to a conception of the power, wisdom and goodness of the Great Creator of all, and offering Him the homage of adoration and praise: and the Gorilla—in total ignorance, in absolute unconsciousness, a perfect blank, in reference to all these.

Such mental progress, such intellectual attainments, or anything that in the most distant degree resembles them, is an absolute impossibility to an ape or any other brute. The *re-presentative faculties*, or reasoning powers, being wanting in the animal, the very foundation for mental progress or improvement is wanting. There is no ground whereon to build, any more than there is in a man born blind to attain to the ideas of color, or one born deaf to those of the variations and harmonies of sounds. Of the power of abstraction the brutes are utterly destitute. The entire field of what we call *knowledge* lies absolutely beyond their reach. Let them be subjected to any process of discipline or instruction that can be imagined, through the whole period of their

* The stories of the Gorillas going in troops, armed with clubs, to attack elephants, carry away women, etc., are repudiated both by Dr. Savage and Mr. Ford, our best authorities concerning these animals. The latter says that no well-informed native believes them, and that they are but tales told to children.

lives, and they cannot be put in possession of a single idea, literary or scientific—of proportion, order, similitude, time, space, succession, number, birth or death, obligation or duty, truth or falsehood, wisdom or argument.

In view of such facts as the foregoing, we plainly see that between man and the highest ape there is a gulf that is literally *immense*. Even Mr. Darwin is forced to make the acknowledgment, "No doubt the difference in this respect is enormous." And Professor Huxley confesses that when we take the *mind* into comparison, there is between man and those beasts which stand nearest to him in anatomy, a difference so wide that it cannot be measured—"an enormous gulf"—"a divergence immeasurable"—and "practically infinite." And what is practically *infinite*, we may confidently add, is practically *impossible*; the elevation of an ape, therefore, into a reasoning man is an IMPOSSIBILITY.

4. *Difference in Language*.—Of all the living tenants of our globe, Man alone can *Talk*; no animal has ever *Spoken*,* in the proper sense of the term. Beasts and birds can utter various sounds expressive of their emotions—of their feelings of pleasure, anger, or terror; and some of them, as the Parrot, can even imitate the sounds of human speech; but none of them can connect definite sounds with definite ideas. Articulate and rational language is peculiar to man, and that for the reason (among others) that man alone is endowed with

* We except, of course, the Serpent in the garden, and the Ass that rebuked the madness of the prophet.

rational faculties, upon which language is dependent. Hence in every book on Logic, Language is quoted as a specific difference between Man and all other beings; thus Stuart Mill, "The attribute of being capable of understanding a language is a *proprium* (peculiarity) of the species of man, since it follows from the attribute of rationality."*

One of the greatest of living linguists tells us that "there is in every language a certain class of words which may be called purely *emotional*. Most interjections, many imitative words, belong to this class. If we deduct these, the rest of language, whether among ourselves or among the lowest barbarians, can be traced back to *roots*, and every one of these roots is the sign of a general concept or idea. This is the most important discovery of the Science of Language. Take any word you like, trace it back historically to its most primitive form, and you will find that it contains a predicative root, and that in this predicative root rests the connotative power of the word. Why is a *stable* called a *stable*? Because it stands. Why is a *saddle* called a *saddle*? Because you sit in it. Why is a *road* called a *road*? Because we ride on it. Why is *heaven* called *heaven*? Because it is heaved on high. In this manner every word, not excluding the commonest terms that must occur in every language, the names for *father*, *mother*, *brother*, *sister*, *hand*, *foot*, etc., have been traced back historically to definite roots, and every one of these roots

* *Logic*, Vol. I., p. 180.

expresses a general concept."* In like manner, "all words which express abstract ideas are borrowed from some material appearance. *Right* means straight; *wrong* means twisted. *Spirit* primarily means wind; *transgression*, the crossing of a line; *supercilious*, the raising of the eyebrow."†

Thus the words composing language are derived from and are expressive of definite properties, relations, uses, etc.; but the emotional utterances of animals have no such roots, possess no such definite ideas or conceptions. The grunt of the Gorilla, we are told, as near as it can be put in English letters, is *kh-ah! kh-ah!* The howl of the Chimpanzee is a hoarse *whoowhoo!* And the cry of the Gibbon, *goek, goek, goek, goek, goek, ha ha ha ha haaāāā!* Can the fertile and vivid imagination of the author of "The Descent of Man" suggest to us what might be the primitive roots of these euphonious ape-words? or define to us the specific idea they involve and convey? or relate to us in a way "we cannot doubt" the process by which they have been improved into the nouns, verbs, and prepositions of human speech?

Evolutionists have never adduced a single instance of any animal speaking, or trying to learn to speak; nor have they been able to explain in any consistent or sensible manner how the barrier of language, which divides man from all animals, might have been effectually crossed. And the hopelessness of any such attempt is sufficiently evident from Mr. Darwin's futile efforts.

* Müller's *Lectures on the Philosophy of Language*, No. 2. † *Ib.*, No. 3.

In one place,* this writer attributes the faculty of speech in Man to his having acquired a higher intellectual nature; while in another place,† he attributes his higher intellectual nature to his having attained the faculty of speech. Thus he argues like the door upon its hinges, going and coming, but making no progress. And his other attempts to bridge over the chasm which separates instinctive cries from rational speech are certainly among the most remarkable examples of groundless speculations that ever found their way into print. See Vol. I., p. 51, etc.

On the subject of Language no higher authority can be quoted than that of Professor Max Müller: "There is to my mind," says this distinguished scholar, "one difficulty which Mr. Darwin has not sufficiently appreciated. There is between the whole animal kingdom on one side, and man, even in his lowest state, on the other, a barrier which no animal has ever crossed, and that barrier is—*Language*. By no effort of the understanding, by no stretch of the imagination, can I explain to myself how language could have grown out of anything which animals possess, even if we granted them millions of years for that purpose. If anything has a right to the name of *specific difference*, it is language as we find it in man, and in man only. I hold that nothing deserves the name of man except what is able to speak. Taking all that is called animal on one side, and man on the other, I must call it inconceivable that

* *Descent of Man*, Vol. I., p. 53.

† *Ib.*, Vol. II., p. 373.

any known animal could ever develop language. Professor Schleicher, though an enthusiastic admirer of Darwin, observed once jokingly, but not without a deep meaning, 'If a pig were ever to say to me, *I am a pig*, it would *ipso facto* cease to be a pig.' This shows how strongly he felt that language was out of the reach of any animal, and the exclusive property of man."*

M. Figueire, in his *L'Homme Primitif*, holds the same view: "Intelligence and speech are really the attributes which constitute Man; these are the qualities which make him the most complete being in creation, and the most privileged of God's creatures. Show me an ape who can speak, and then I will agree with you in recognizing it as a fact that man is nothing but an improved ape!"

"The philosopher," says Professor Max Müller, "discovers in the line which separates rational from emotional language—in the *roots* of all languages—the true barrier between Man and Beast. I do not ask, like others, for a persuasive appeal from the throat of a nightingale, or for a gruff remonstrance from a gorilla, before I admit that they may be among the ancestors of the human race. Show me only one single *root* in the language of animals—show me one animal that has the power of forming roots, that can put one and one together, and realize the simplest dual concept; show me one animal that can think and say *Two*, and I should say that as far as language is concerned, we cannot

* *Lectures on the Philosophy of Language*, No. 2.

oppose Mr. Darwin's argument. Certain it is, that neither the power of language, nor the conditions under which alone language can exist, are to be discovered in any of the lower animals.

"If language is what I hold it to be—the embodiment of conceptual thought, developed from roots, and based on concepts—then man cannot be the descendant of some lower animal, because no animal except man possesses the faculty, or *the faintest germs of the faculty*, of abstracting and generalizing, and therefore no animal, except man, could ever have developed what we mean by language. . . . It becomes our duty to warn the valiant disciples of Mr. Darwin that before they can claim a real victory, before they can call man the descendant of a mute animal, they must lay a regular siege to a fortress which is not to be frightened into submission by a few random shots—the *Fortress of Language*—which, as yet, stands untaken and unshaken on the very frontier between the animal kingdom and man." *

The learned author of *The Genesis of the Earth and of Man*, discoursing on the development of language, says, "We regard the first of our species, like the more advanced of his progeny, as endowed with a faculty of speech proportioned to his necessities. Our admiration must increase as we consider languages of higher and higher degrees of excellence; but the rudest conceivable kind of speech is marvellous enough to exalt the

* *Lectures on the Philosophy of Language*, No. 3.

nature of man immeasurably above that of the brute creation." Page 226.

5. *Moral difference.*—To the mental furniture of Man belongs a Moral Sense, which is to be found in no other earthly creature. He is endowed with Conscience, a power or capacity by which he instantly and irresistibly feels the difference between right and wrong. This is his noblest and crowning faculty. Its peculiar office is to arbitrate and direct all his other powers and propensities according to rectitude, so far as that is apprehended by his understanding. To the last line and limit of its enlightenment, its voice is always and everywhere distinct and authoritative on the side of right, of truth and justice. "This sense," says Mackintosh, "has a rightful supremacy over every other principle of human action." Its authority is to the soul sacred and supreme. It is empowered to pronounce censure and applause, and to administer rewards and punishments. It follows up every act and exercise of man with instant approbation or condemnation; if its dictates are cheerfully and implicitly obeyed, it bestows in reward the pleasure of inward complacency and self-approbation; but if its impulses are resisted or disregarded, it inflicts the pain of a sense of guilt, or the feeling of remorse.

Of the existence of such a faculty in the breast of man there is no doubt. Now the question is, Whence this Moral Sense to man? Mr. Darwin does not hesitate to declare that it is the development of brutal instinct. "The first foundation or origin of moral sense," he says, "lies in the social instincts, including sympathy; and

these instincts no doubt were primarily gained, as in the case of the lower animals, through Natural Selection."* And he thus attempts to account for its growth and maturity into what we now call conscience: "The social instincts lead an animal to take pleasure in the society of its fellows, to feel a certain amount of sympathy with them, and to perform various services for them. . . . The social instincts would give the impulse to act for the good of the community. . . . Habit in the individual would ultimately play a very important part in guiding the conduct of each member. . . . Each individual would have an inward sense of possessing certain stronger or more enduring instincts, and others less strong or enduring, so that there would often be a struggle, which impulse should be followed, and satisfaction or dissatisfaction would be felt, as past impressions were compared during their incessant passage through the mind. In this case an inward monitor would tell the animal that it would have been better to have followed the one impulse rather than the other. . . . Thus any animal whatever, endowed with well-marked social instincts, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well developed, or nearly as well developed, as in man."†

It is obvious from these and other similar passages, as also from the examples and illustrations employed by Mr. Darwin, that he has never duly weighed what is involved in moral perception and judgment—in the idea

* *Descent of Man*, Vol. II., p. 377.

† *Ib.*, Vol. I., p. 68-70.

of right and wrong, obligation and duty. His conception of the moral sense, briefly expressed, seems to be—the prevalence of more enduring instincts over less persistent ones, the former being social instincts, the latter personal ones. But social instincts and social feelings are one thing, and a sense of right and wrong another thing, and quite as different as color is from shape, or sound from substance. No instinct, and no amount of kindly habits proceeding from instincts tend even in the remotest degree to account for conscience. Such habits may make the doing of such beneficial acts pleasant, and their omission painful; but such feelings have essentially nothing whatever to do with the perception of *right* and *wrong*, nor will the faintest incipient stage of the perception be accounted for by the strongest development of such sympathetic feelings. Liking to do acts which happen to be good, is one thing; seeing that actions are good, whether we like them or not, is quite another.

Again: If the "social instinct" were the real basis of the moral sense, the fact that *society* approved of anything would be recognized as the supreme sanction of that thing. But so far is this from being the case, that conscience pronounces its judgment on the doings of society itself, often condemns its proceedings, and sometimes chooses death rather than submit to its demands.—Altogether, as Dr. McCosh has justly pronounced, "Mr. Darwin's theory of the origin of our moral ideas is one of the loosest and most unsatisfactory—indeed, one of the weakest ever propounded."*

* *Christianity and Positivism*, p. 359.

This author, in the words before quoted, says that it is possible for "any animal to acquire a moral sense or conscience"—it would have been much more to the point, and infinitely more satisfactory, than all his incoherent reasoning, had he referred us to any species of animals that are passing through the process he describes, that are now acquiring in some faint or slow degree a moral sense or conscience. But this he has not pretended to do, for the all-sufficient reason we suppose, that no such animals are in existence.

"It may safely be affirmed," says St. George Mivart, "that there is no trace in any brutes of any action simulating morality which are not explicable by the fear of punishment, by the hope of pleasure, or by personal affection. No sign of moral reprobation is given by any brute; and yet had such existed in germ through Darwinian abysses of past time, some evidence of its existence must surely have been rendered perceptible through 'survival of the fittest' in other forms besides man, if that 'survival' has alone and exclusively produced it in him."*

The moral faculty is entirely wanting in all apes and all other brutes; they possess nothing resembling a sense of right and wrong, of justice and injustice, of truth and falsehood. There is in them no inward monitor to approve or condemn their actions or conduct. No dog was ever seen compelled by inward smitings to return the meat he had stolen from the butcher's stand, or ever

* *Genesis of Species*, p. 211.

known to lose his appetite and sleep through remorse for lacerating the playful infant that chanced to touch his ear. To all such feelings animals are utter strangers; they are in their nature incapable of the faintest idea of the morality or immorality of their doings. Virtue and vice, honesty and fraud, justice and mercy, are conceptions as far above them as are the starry heavens above the earth.

Man only is a moral being. Man only acts from a sense of duty. "Duty!" exclaims Immanuel Kant,* "Wondrous thought, that workest neither by fond insinuation, flattery, nor by any threat, but merely by holding up thy naked laws in the soul, and so extorting for thyself always reverence, if not always obedience; before whom all appetites are dumb, however secretly they rebel; whence thy original?" We answer, From God, and from God direct. Conscience is a revelation of the Supreme Will in the human soul, and is designed to bring man not only into converse with goodness, but to relate him to it, as the power that should govern him in his daily conduct, and guide him to daily happiness. It is conscience that bestows upon human life all its sacredness and moral beauty; and it is destitution of conscience that leaves the whole brute creation irresponsible, ignoble, and doomed at death to final extinction.

If, now, we review what has been said of Man in comparison with the Gorilla, and bring together all the differences enumerated and described under the five

* *Metaphysics of Ethics*, p. 136.

foregoing heads—the difference in aspect and habits and expression, in the structure of the body and the formation of the brains and muscles, in intellectual endowments and progress and achievements, in the use and advantages of articulate language, and in the high distinctions of a moral sense—we shall at once clearly see, and feel abundantly convinced that the Gulf—the Ocean—which separates them is truly “enormous,” “immeasurable,” and “practically infinite”; and consequently practically *impassable*. And yet, in the face of all this, we are asked, and that unsupported by a single well-established fact as to *time* or *locality* or *means* or *method*, to believe that some “hairy quadruped,” some “ape-like creature,” with no other guide than “chance,” no other aid than “fortuitous variation,” has conducted successfully a voyage occupying millions of years across this immense waste, and at length landed triumphantly on the elevated and sunny plain of Intellect and Morality, from whence he now exercises dominion and authority over all that live or move or breathe in all the earth! We are asked, we say, *to believe all this*—the demand, we must confess, utterly bankrupts all the credulity at our command. With all deference to authorities, we must beg leave to say, that the feat seems to us as incredible, as Baron-Munchausen-like, as if we had been told that toward the close of the Miocene Period, a Baboon set out to undertake the flight of crossing the space which divides the Earth from the planet Saturn, and having accomplished the exploit, now sits complacently on the resplendent arch of its inner Ring,

surveying the wonders of the planetary landscape spread out beneath him. If we can receive the former, there is nothing to forbid us to believe the latter.

Let us, however, devote a moment to glance at the *style of reasoning* or the character of the argument by which this extraordinary theory is recommended to our acceptance and belief. Thus it runs—"There must have been a series of forms graduating insensibly from some ape-like creature to man as he now exists, and it would be impossible to fix any definite point when the term Man ought to be used. But this is a matter of very little importance."*

This certainly is what may be called "free and easy" *science*, and equally "free and easy" *theology*.

"'Tisn't easy to settle *when* Man became Man ;
When the Monkey-type stopped and the Human began,
As some very queer *things* were involved in the plan."

"But this is a matter of very little importance!"

Again: the qualifying term of the process—"insensibly." The reader will not fail to notice that *this word* begs the whole question. If we may be allowed this insensible-gradation argument, we can prove whatsoever we please. Two beings, or two objects, cannot be conceived so distinct, or so dissimilar, or so heterogeneous, but give us "a few millions of years," and plenty of "environment," we can, with the use of this kind of logic, prove the one to have been developed from the other; we can prove that the ant is a descendant of the

* *Descent of Man*, Vol. I., p. 226.

rhinoceros, and that the butterfly is the offspring of the whale—let us but “imagine” a descending series of sufficient length having existed between them, and the demonstration is complete; in short, we can prove that the circle has been developed from the triangle, that two parallels can meet, and that a straight line may return upon itself and enclose a space.

“This old fallacy,” observes Max Müller, “of first imagining a continuous scale, and then pointing out its indivisibility, affects more or less all systems of philosophy which *wish to get rid of specific distinctions*. The admission of this insensible graduation would eliminate, not only the difference between ape and man, but likewise between black and white, hot and cold, a high and low note in music; in fact, it would do away with the possibility of all exact and definite knowledge, by removing those wonderful lines and laws of nature, which change the Chaos into a Kosmos, the Infinite into the Finite, and which enable us to count, to tell, and to know.”

Leaving the argument, let us now inquire after the “Series.” This began, we are told, with an offshoot of the “Old World Monkeys.” This ape-like creature had its offspring, more or less; these, in like manner, had their offsprings; and these again had theirs; and so on. Now, we wish to ask, did the successive generations forming these lines of descent *all* travel gradually toward the goal of humanity, or only *one* of them?

If *all* made upward progress, then, their progress being by “*fortuitous* variation,” some would advance slower

and some faster than others; so that, at length, as the foremost emerged into distinct manhood, others would be short of that point, some, say, one-tenth, some two-tenths, some three-tenths, and so on all the way down to those which had made no perceptible progress. Hence man should have found co-existing with him a regular gradation of beings, descending on every side from himself down to the ape. But no such gradation exists; between man and his *nearest* living ally is an "immeasurable gulf."

If it be said that only *one* series ascended toward manhood; then, in this case, that one in the course of its upward progress must have thrown out branches that were continually in advance of the previous ones, and others in advance of these, and so on all the way to pure manhood; we should, therefore, even from the single series, still have among us at the present day a gradation of animals down to the ape-like creature. But by common consent no such a graduated series is to be found.

If, to escape from this difficulty, it be said, as Darwin does, that all the branches of this series together with their offsprings have perished, except the single one that ripened into manhood—then we would ask, Since each generation in the series of man's progenitors, from the "hairy quadruped" to man himself, must have been in advance and better fitted to maintain its position in the world, than any which preceded it, how perished *all these*, while mere monkeys, which had made no progress at all, still survive and flourish? Here, Mr. Darwin in his efforts to escape from Scylla falls into Charybdis—

according to his theory, the fittest should have survived; but according to his facts, the fittest have perished.

The intermediate series of animal forms between Man and the ape have perished and become extinct, we are told—here the very thing to be proved is gratuitously *assumed*; we must have evidence that the series ever existed, before we can believe that it has perished. But admitting for the moment, that they have all perished, we ask, how is this accounted for? We demand that some reason be assigned for such a remarkable occurrence. The number of forms in that series must have been exceeding great—the more “insensible” the process, the greater the number of forms. Now we ask Darwinians to account for this fact, for fact it must be, if their hypothesis be true, that all these myriads of intermediate forms, without a single exception, have become extinct, while the first and the last links, the ape and the man, still survive. Why have we no species of living creature half way, or some other part of the way, between these? Why is not the vast gap occupied by more or less of these supposed numerous intermediate forms, seeing that many feebler animals, that must have been contemporary with every one of these links, still live and multiply on the earth? To this question they can return no satisfactory answer whatever—here their theory breaks down—for the assumption they make to support it, they can offer no reason, nor the shadow of reason.

If it is still insisted that they have perished and become extinct, then we ask for their *bones*, or at least

for their *fossils*. Can these be produced? None of them. What reply then is made to the demand for them? None other than this evasive one, "The discovery of fossil remains has always been an extremely slow and fortuitous process." Have no fossil remains, then, of any kind been found which can be produced, in support of the theory, either of the immediate or remote progenitors of man? Let Mr. Darwin answer—"The great chasm between Man and his nearest allies cannot be bridged over by any *extinct* or *living* species."* Thus the supporters of the development hypothesis fail, not only to produce the organic *chain*, which they say connects man with the ape, but they cannot produce even a fossil *link* of that chain.

It is entirely obvious, hence, that we are warranted to conclude, that this "intermediate series of animal forms between Man and the ape" never existed, save in the *imagination* of those who hold to it; and that the whole train of reasoning by which it is attempted to support this theory is illogical, inconclusive and unsatisfactory to the last degree.

There are absolutely *no facts* either among the developments of Geology, or in the written History of the past, or in the actual Experience of the present, that can be referred to in proof of the descent of man from an ape-like creature. There is nothing within the compass of human observation or research, to indicate that man, as we travel backwards into the past, will be found to

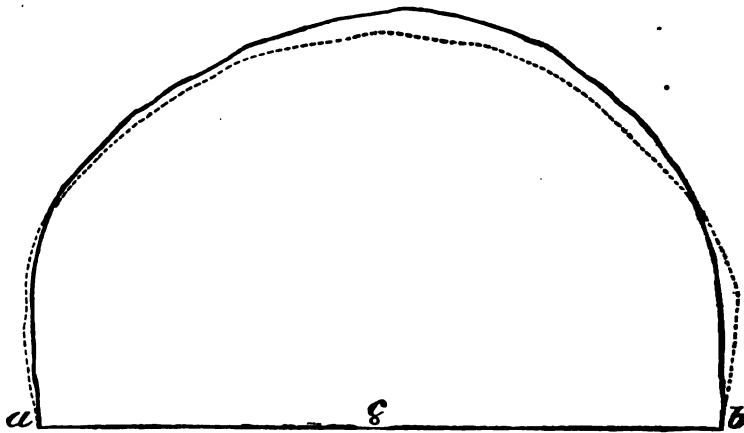
* *Descent of Man*, Vol. I., p. 200.

descend toward the ape in mind or body. We of the present, with all our boasted advantages, do not possess any native mental powers superior to those of the earliest periods of human history. Neither Mr. Darwin nor Professor Huxley, we presume, would venture to affirm that Seneca, Marcus Antonius, Cleanthes, Aristotle, Plato, Homer, and many others, were not in this respect fully abreast of ourselves. And if we recede far beyond the utmost limit of the historic period, and examine the most ancient human remains that have thus far been discovered, we shall find no material diminution in the size of the cranium or brain-case of men. A Swiss skull of what is called the "Stone Age," found in the lake dwelling of Meilen, corresponds exactly to that of a Swiss youth of the present day. The celebrated Neanderthal skull exhibits a fair circumference and capacity, fully equal to those given by Morton to the Polynesian races of the present day; and Professor Huxley* makes the candid acknowledgment in regard to it, that, "in no sense can the Neanderthal bones be regarded as the remains of a human being intermediate between Men and Apes." The Engis skull, doubtless the very oldest known, and which according to Sir John Lubbock there seems no doubt was really contemporary with the Mammoth and the Cave Bears, is yet perfectly human in all its proportions. "Its measurements," says Huxley, "agree well with those of some European skulls. And assuredly there is no mark

* *Man's Place in Nature*, p. 181.

of degradation about any part of its structure. It is, in fact, a fair average human skull, which might have belonged to a philosopher. In conclusion, I may say, that the fossil remains of Man hitherto discovered do not seem to me to take us *appreciably nearer* to the ape form.”*

The following passage occurs in the very able and interesting paper read by Principal Dawson before the



OUTLINES OF THE ENGIS SKULL.

The dotted line represents that of a European. a. The glabella. b. The occipital protuberance
c. The auditory foramen of the Engis Skull.

Evangelical Alliance at its recent meeting in the city of New York :

“The physical characters of the known specimens of primitive men are unfavorable to the doctrine of evolution. Theories of derivation would lead us to regard the most degraded races of men as those nearest akin to the primitive stock ; and the oldest remains of man should

* *Man's Place in Nature*, pp. 181-188.

present decided approximation to his simian ancestors. But the fact is quite otherwise. The skulls of the most ancient European men known to us are comparable with those of existing races, and further, the great stature and grand development of the limbs in those of the most ancient skeletons which are entire or nearly so, testify to a race of men more finely constituted physically than the majority of existing Europeans. The skull found by Schmerling in the cave of Engis, associated with the bones of the mammoth and other extinct animals, is of good form and large capacity, and presents characters which, though recalling those of some European races, also resemble those of the native races of America. The bones described by Christy and Sartet, from the cave of Cro-Magnon, in France, represent a race of great stature, strength and agility, and with a development of brain above the European average; but the lines of the face show a tendency to the Mongolian and American visage, and the skeletons present peculiarities in the bones of the limbs found also in American races, and indicating, probably, addiction to hunting and a migratory and active life. These Cro-Magnon people lived at an epoch when France was overgrown with dense forests, when the mammoth probably lingered in its higher districts, and when a large part of the food of its people was furnished by the reindeer. Still more remarkable, perhaps, is the fossil man, as he has been called, of Mentone, recently found in a cave in the South of France, buried under cavern accumulations which bespeak a great antiquity, and associated with bones of extinct

mammalia and with rudely-fashioned implements of flint. It appears from the careful descriptions of Dr. Rurere that this man must have been six feet high and of vast muscular power, more especially in the legs, which present the same American peculiarities already referred to in the Cro-Magnon skeletons. The skull is of great capacity, the forehead full, and the face, though broad and Mongolian and large-boned, is not prognathous, and has a high facial angle. The perfect condition of the teeth, along with their being worn perfectly flat on the crowns, would imply a healthy and vigorous constitution and great longevity, with ample supplies of food, probably vegetable, while the fact that the left arm had been broken and the bone healed, shows active and possibly warlike habits. Such a man, if he were to rise up again among us, might perhaps be a savage, but a noble savage, with all our capacity for culture, and presenting no more affinity to apes than we do.

"I have referred to European facts only, but it is remarkable that in America the oldest race known to us is that of the ancient Alleghans and Totheans and their allies, and that these, too, were men of large stature and great cranial development, and agricultural and semi-civilized, their actual position being not dissimilar from that attributed to the earliest cultivators of the soil in the times of Adam or Noah.

"So far the facts bearing on the physical and mental condition of primitive man are not favorable to evolution, and are more in accordance with the theory of Divine Creation, and with the statements of the sacred record.

“With reference to these pre-historic men, known to us only by their bones and implements, it may not be possible to discover their belief as to the unity of God; but we have distinct evidence on the other points. On the oldest bone implements—some of them made of the ivory of the now extinct mammoth—we find engraved the tokens or Manitou marks of their owners, and in some cases scratches or punctures indicating the offerings made or successes and deliverances experienced under their auspices. With regard to the belief in immortality, perhaps also in a resurrection, the Mentone man—whose burial is perhaps the oldest known to us—was interred with his fur robes and his hair dressed as in life, with his ornaments of shell wampum on his head and limbs, and with a little deposit of oxide of iron, wherewith to paint and decorate himself with his appropriate emblems. Nor is he alone in this matter. Similar provision for the dead appears at Cro-Magnon and the cave of Bruniguel. Thus the earliest so-called palæolithic men entertained belief in God and in immortality, perhaps the dim remains of primitive theism, perhaps the result of their perception of the invisible things of God in the works that He had made.”

So far, then, as any discoveries of this nature have yet been made, they plainly indicate that *what man now is man always has been*; and that he has ever been separated from all brutes by a gulf practically infinite.

Upon what, then, it may be asked, do Mr. Darwin and his followers ground their arguments in support of their theory of Man's descent? Mainly on *resemblances*

between certain parts and functions of the human body to corresponding ones in animal bodies. These resemblances are for the most part distant, often faint or doubtful, and not unfrequently merely fanciful; while the inferences drawn from them are altogether unwarranted. This will be sufficiently evident from the following examples.

Every kind of beast originates in an ovule, Man also is developed from an ovule; these two kinds of ovules are so diminutive (man's not exceeding the one hundred and twenty-fifth part of an inch in diameter), and so similar in their composition, that the eye cannot distinguish them: from this the astounding leap is made at once to the conclusion that "the human ovule differs in no respect from the ovules of other animals."* This inference, it will be observed, is based, not on the *proved identity* of the ovules, but on man's *ignorance*, or his inability to detect the difference, and is, therefore, worthless. Here, indeed, is similarity, but not identity; for, if such ovules differed "in no respect," then that of a donkey under certain conditions might turn out an ape, or an elephant. But such a thing has never been known; throughout the animal kingdom every ovule develops into a creature after its own kind; and this *unfailing uniformity* is a demonstration that the human ovule does differ, and differ essentially from those of all other animals.

The unborn infant about the sixth month puts forth over the whole body a growth of very fine soft hairs,

* *Descent of Man*, Vol. I., p. 14.

called *lanugo*; this, we are told, "must be considered to be the rudimental representative of the first permanent coat of hair in those animals that are born hairy."* The female as well as the male foetus is furnished with this lanugo on the face, "especially round the mouth; and this indicates that we are descended from a progenitor of which both sexes were bearded."† If man has scattering hairs on his body both as an embryo and an adult, does it necessarily follow that he is indebted for them to some hairy quadruped? We are shut up to no such conclusion; why may not man have hair as independent of the quadruped, as the quadruped of man? Are we to conclude from the "fine wool-like hair" which covers the tender shoots of many a giant tree when they first spring up from the ground, that these trees are the descendants of some ancient trees that were covered with "a permanent coat of hairs?"

Consenting for the instant to the above idea, we cannot refrain from asking, How came man to lose his hairy coat? Well, it is first suggested that it might have been through the action of the sun, while living in a hot climate.‡ But this supposition is found to lead to the puzzle, how came the sun to spare the *head*, the most exposed part, where hair still grows luxuriantly? From this difficulty, however, we are finally extricated by the intervention of "Sexual Selection." Incipient man gradually changed in his taste, and came to fancy and choose mates with less and less hairy bodies; hence

* *Descent of Man*, Vol. I., p. 25. † *Ib.*, Vol. II., p. 362. ‡ *Ib.*, Vol. I., p. 143.

incipient woman came to regard nudity as being ornamental, and under the influence of her instinctive desire to please, found her hair growing "small by degrees, and beautifully less!" "As our female progenitors gradually acquired this new character of nudity, they must have transmitted it in an almost equal degree to their young offspring of both sexes. There is nothing surprising in a partial loss of hair having been esteemed as ornamental by the ape-like progenitors of man."* But the comical part of this imaginary piece of natural history is, that the whole of the grotesque idea has been suggested by the very noticeable fact that, "in several species of monkeys, a large surface of the posterior end of the body has been denuded of hair, that the vivid color of the skin should be more fully displayed—this surface extends as the animal approaches maturity!"† Remarks here are inadmissible—we may, however, add the statement of St. George Mivart, "No zoological facts known to me afford the slightest basis for this bizarre hypothesis."‡

Some animals, such as cats and rats, have long hairs about the mouth, which serve them as feelers; and Mr. Darwin, having been informed that some men have a few hairs in their eyebrows much longer than the others, reaches this important inference therefrom, to wit, that "these long hairs (in the eyebrows) apparently represent the *vibrissæ*, which are used as organs of touch by many of the lower animals."|| Admirable logic! Some persons have a few long hairs in their *eyebrows*, which they

* *Descent of Man*, Vol. II., p. 360.

† *Ib.*, Vol. I., p. 60.

‡ *Pop. Sci. Review*.

|| *Descent of Man*, Vol. I., p. 25.

do not use as feelers; cats and rats have long hairs on their *upper lip*, which they *do* use as feelers; man, therefore, is descended from the same primal stock as cats and rats!

Animals are subject to such diseases as hydrophobia, variola, glanders, etc.; man also may be affected by the same diseases; the inference, therefore, made is, that their tissues and blood are similar, and must have proceeded from the same origin.* One and the same evil may affect and destroy a variety of animals; this, therefore, according to the above argument, is *evidence* that all these animals have come from one and the same progenitor! Would it not have been equally good reasoning to say, Animals can be burnt, or frozen, or poisoned, or starved; man can be burnt, or frozen, or poisoned, or starved; therefore man and animals must have come from the same ancestor?

Animals can twitch their hides as horses and cattle do to drive away troublesome flies; man can do something very similar, he can raise his eyebrows, wrinkle his forehead, and sometimes slightly move his scalp; and this power in man is forthwith put down as "a remnant" of that which is still found in full force in the animal,† when every man's common sense tells him that this is a part of "the power of the face" as much as that which enables him to put on the expression of laughter, grief, anger, or terror.

The jaws of certain beasts, such as the wild boar, the

* *Descent of Man*, Vol. I., pp. 11, 12.

† *Ib.*, Vol. I., p. 19.

tiger, and the gorilla, are armed with four large and long teeth, or tusks, for holding and tearing their prey; and man has four teeth in the same relative positions, which, though somewhat pointed in form, are of even length with all the rest; from this the startling conclusion is reached that "the early male progenitors of man were probably furnished with great canine teeth, which served them as weapons for fighting and tearing their enemies."* This is about as legitimate an inference as that we have had from the long hairs in a man's eyebrows.

In about one man in ten thousand a little thickening, or rounded fulness, on close inspection, may be observed on the inside margin of the ear; this, it is gravely said, "we may safely conclude is a vestige of formerly pointed ears, which occasionally reappears in man."† And Mr. Darwin saw one man who could draw his ears forward a trifle, and another who could draw them as much backwards. The evident significance of all this, we are given to understand, is, that man in a former period of his history walked about with long pointed ears, and "that he had the faculty of erecting them, and of directing them to different points of the compass."‡ Mr. Darwin further instructs us on this point, that our ears acquired their present neat form by "folding inwardly the margin;" but who the skilful and tasty operator was, that initiated this improvement, we are not informed. He also conveys the suggestion that "probably by often touching our ears, and thus directing our attention to

* *Descent of Man*, Vol. I., pp. 121, 122. † *Ib.*, Vol. I., p. 23.

‡ *Descent of Man*, Vol. I., pp. 20-22.

them, we could, by repeated trials, recover our lost power of moving them."*. As this power, under many circumstances, might be of advantage, some one has suggested that our Schoolmasters would do well occasionally to exercise their pupils in this direction; and that, "Erect your ears, Boys," might come in as a part of the daily drill.

Once more: "The *os coccyx* in man," that is, the lower extremity of his spine, "is short, usually including only four vertebræ; and these are in a rudimental condition. This, though functionless as a tail, plainly represents this part in other vertebrate animals."† In what way this appropriate and convenient terminus of the back-bone proves, or even intimates, that it once extended into a long tail, we are not able to conceive. It is a fact, Mr. Darwin's quoted authority to the contrary notwithstanding, that the *os coccyx* in man has nothing belonging to it like a tail; "it has no joints, nor has it muscles that can move it, as a tail must have."‡ If man ever had a tail, we beg to know what has become of it. Mr. Darwin owns that "so far as he is aware, no explanation of this loss has ever been given." But why is not that offered long ago by Lord Monboddo a good one, "Man rubbed off his tail by sitting on it?"

So trivial, so uncertain, so fanciful, are the instances of resemblance which Mr. Darwin introduces, and so unwarrantable are his inferences from them, that one is amazed they could aid him in justifying, even to his

* *Descent of Man*, Vol. I., pp. 20-22.

† *Ib.*, Vol. I., p. 28.

‡ *Homo vs. Darwin*, p. 70.

own mind, the astounding conclusion that *Ape is father to the Man!* His fondness for his favorite theory seems to have enervated his natural power of reasoning, and to have rendered him blind and insensible to everything that tells against it. "He has allowed himself," says an anonymous writer, "to become so enamored of the venerable pair of hairy quadrupeds, with tails and pointed ears, from whom he thinks himself descended, that he skips over mountains more impassable than the Himalayas, and flies on the wings of imagination across separating and unfathomable abysses, that he may embrace them."

Mr. Darwin, indeed, speaks of "the Creator and Ruler of the universe," but his theory does not recognize Him as such—gods of his own creation are made to usurp and occupy His throne. "Darwin's theory," as Dr. Vogt says, "*ignores a personal Creator, and his direct interference in the transformation and creation of species, there being no sphere of action for such a being.*" Given the first starting-point, a first organism, all existing organisms are subsequently by natural selection developed from it in a continuous manner through all geological periods, by the simple laws of transmission. There arise no new species by any creative interference. Even man is *neither a distinct creation, formed in a special manner, and different from all other animals, nor provided with a special soul, nor endowed with a divine breath of life;* he is only the highest product of a *progressive natural selection*, and descends from the simious group standing next to man." Darwin employs such words as "con-

trivance," "purpose," "adaptation," and "design;" but he uses them, as Mivart truly observes, in "a mere figurative sense—as metaphors, and nothing more." He talks also of "laws"—the "law of variation," and the "law of natural selection;" but all that he can mean by the term is the merest *chance* or *accident*, though he disclaims this; for what are the main causes of "variations?" These—the character of the mate with which an animal may happen to consort, the soil or climate to which whim may happen to lead it, or its enemies happen to drive it. And "natural selection"—what is the naked fact covered by this phrase? The chance issues of chance encounters among beasts, or birds, or other animals—we say *chance issues*, for among brutes as among men, "the battle is not always to the strong, nor the race always to the swift." Now can anything be well imagined more purely accidental or fortuitous than such matings, whims, wanderings and fightings among irrational creatures? And yet these are "the laws" by which the world has been framed!

Indeed, the very existence of the human race itself, according to this theory, is but an accident. That the Ascidian Tadpoles, after passing through the revolutions of millions on millions of years, at last developed into monkeys and monkeys into men, depended upon as many millions of contingencies. "We have given to man a pedigree of prodigious length," says the great Seer of Development; "if a single link in this chain had never existed, man would not have been exactly

what he now is."* To go no further back—If the bodily structure of some member of the Old World monkey family had not happened to be more plastic than the rest—if that member had not chanced to meet with a like plastic mate—if these had produced no posterity, or posterity not inheriting their own qualities, or had their posterity been cut off—if there had not occurred a change in the physical conditions of the region they inhabited, rendering necessary a change in their manner of procuring food—if they had not become less arborial in their habits—if when they forsook the trees they had not begun to walk on their hind limbs instead of going on all-fours—if any one of these contingencies had not occurred, the human race had never existed; there would still have been in the world nothing higher or better than the hairy quadruped, with tail and pointed ears, climbing and living in the trees of the forest; man, "the wonder and glory of the universe," had not come forth to subdue the earth, or to fill it with monuments of his skill and industry, or to adorn it with altars and temples erected to the glory of its Divine Builder.

Hence, according to Mr. Darwin, mankind are a fortuitous Race, living in a fortuitous world. And what is this but practical Atheism, and Atheism of the most dreary and hopeless kind? If this theory does not expressly deny God, it effectually ignores God. Its tendency is to remove the Divine Being entirely from the view of man, and to lead to disbelief in His provi-

* *Descent of Man*, Vol. I., p. 205.

dence, in His having any connection with or interest in human affairs. The whole living world is given up by this hypothesis to the blind power of "fortuitous variation," and to the hard, unsympathetic, and relentless rule of "natural selection." The system admits not of the regard or the notice of a loving Father in heaven; of no beneficent providence over man or brute. For anything that it allows the Creator to do in the realm of material nature, or in the kingdom of animated beings, it might as well have been written, "God has nothing to do with the world." On this hypothesis, Divine benevolence has never been exercised toward man; Divine revelation is a fable; salvation from sin and misery is a myth; and the hope of immortality but the illusion of a dream.

To call in the agency of the Creator to account for any of the phenomena, or for the existence of any of the organized beings we find in the world, is very distasteful to the advocates of Development; they openly and strenuously object to it; it is put down as unscientific, and deemed derogatory to the standing of a true Student of Nature. Professor Huxley, speaking of the succession of animals upon the earth, says, "When we look at this wonderful history, and ask what it means, it is only a paltering with words if you are offered the reply—'They were so created.' Notwithstanding all this, we discover that Mr. Darwin himself has committed, in one instance at least, this very 'unscientific' sin. In order to obtain a starting-point for his system of animal development, he is constrained to resort to Divine agency; for he

speaks in one place of 'life having been originally breathed by the Creator into a few forms, or one;' and in another place of 'animals having descended from at most four or five progenitors.'* If, therefore, it be thus admitted that the immediate agency of the Creator has been concerned in the production of four or five different kinds of animals, why not in four or five hundred, or even in as many as there are of distinct species in existence? There is nothing more unscientific or improbable in the latter admission than in the former. And if it be confessed that the Creator condescended to put forth his power directly and immediately for the production of the first and lowest and simplest of the earth's living tenants, what ground is there to deny, or even to doubt, that He exercised his power in a similar manner for the creation of Man, the highest and noblest of all terrestrial creatures? On Mr. Darwin's own admission, therefore, there is nothing incredible, nothing improbable in the Scripture statement that God himself formed man, and breathed into his nostrils the breath of life, and made him a living soul.

Mr. Alfred Wallace, one of the authors of the theory of development, makes concessions still more explicit and decisive. He acknowledges even in regard to man's *body*, that Natural Selection "alone" could not have produced it—that an action took place in its formation "different" from that by which brute forms were evolved—and that there is evidence of the action of an "over-

* *Origin of Species*, pp. 424, 429.

ruling Intelligence" in the evolution of the human form Divine. And to the idea that the human *mind* has been derived from that of the brute, he urges objections drawn from the origin of some of man's mental faculties, such as "the capacity to form ideal conceptions of space and time, of eternity and infinity—the capacity for intense artistic feelings of pleasure, in form, color and composition—and for those abstract notions of form and number which render geometry and arithmetic possible;" he also urges similar objections grounded on the origin of the moral sense or conscience. This writer further states, that in his opinion, man is to be placed "apart," as not only the head and culminating point of the grand series of organic nature, but as in some degree *a new and distinct order of being*.^{*} And what is all this but a virtual admission that Man, after all, both as to his Body and Mind, is, as the Bible declares, a creation of God—the product of a distinct and immediate act of infinite power and wisdom?

Mr. St. George Mivart, also an evolutionist, but of a somewhat different school from Darwin, while he holds that "the *body* of man was not an absolute creation, but evolved from pre-existing material, symbolized by the term 'dust of the earth,' by the operation of secondary laws"—affirms that "his *soul*, on the other hand, was created in quite a different way, not by any pre-existing means, external to God Himself, but by the direct action of the Almighty, symbolized by the term 'breathing,'

^{*} See *Natural Selection*, pp. 324-368.

the very form adopted by Christ when conferring the supernatural powers and graces of the Christian dispensation."* Here again, this evolutionist like the two preceding, after a whole volume of discussions and illustrations of his special views of Development, finds himself at the close of it constrained to admit the sum and substance of the whole Scripture account of man's creation.

From the Darwinian Hypothesis, then, the Christian has nothing to fear—nothing, indeed, to give him one anxious or uneasy thought as to the ground of his faith. The theory is powerless to affect the Sacred Record—its author has utterly failed to make out the descent of Man from the Ape. The Scripture history of man—of his creation in holiness, of his fall through disobedience, and of his redemption through grace—remains unmoved, unshaken. This daring and desperate assault, like a hundred others before it, to undermine the Holy Book, has been made but to share the fate of the wave that madly rushes on the rock-bound coast—to be dashed into spray and forced to retire, leaving behind it not a trace of its violence. The foundation of God standeth sure as ever; and in this additional discomfiture of the enemies of the Word, the believer may find another confirmation of the assurance given, *THE GATES OF HELL SHALL NOT PREVAIL AGAINST IT.*

* *Genesis of Species*, p. 300.



ETHNOLOGY

AND

THE UNITY OF MANKIND.

In the centre of Athens, in the midst of matchless monuments of human skill, and confronting the learning and the pride which exalted the Athenian above every race in the world, Paul boldly proclaimed the distasteful truth, that "God hath made of one blood all nations of men for to dwell on all the face of the earth."—FRASER.

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I. POINTS OF DIFFERENCE IN THE HUMAN RACES: DIFFERENCE IN SKULLS,
COLOR, AND HAIR.

II. POINTS OF IDENTITY IN THE RACES: IDENTITY IN ORGANIZATIONS, FUNC-
TIONS, PERIODS, INTELLECTUAL AND MORAL FACULTIES, LANGUAGES,
CUSTOMS, ETC.


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ETHNOLOGY

AND

THE UNITY OF MANKIND.

THNOLOGY is a science of quite recent origin, and treats of *National Distinctions*. It differs from History in that it deals chiefly with the effects of physical influences on man, such as those of climate, soil and food; it also goes back beyond the dawn of history, by reasoning from effect to cause. In this respect it is somewhat analogous to Geology. It deals with the peoples that inhabit the earth's surface in a similar way to that which Geology pursues with regard to the strata that compose it. Its object is to determine the affinities, relations and origin of the nations of the world, by investigating and tracing their movements and migrations long before the existence of written records.

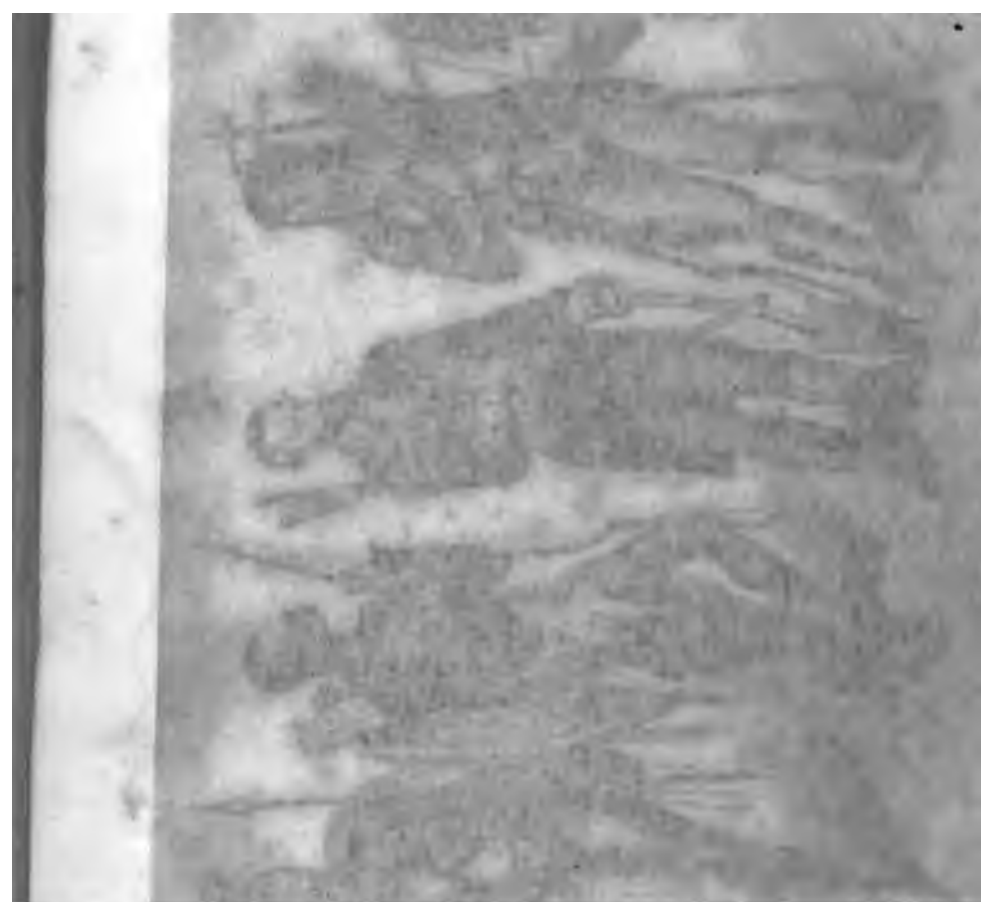
The most cursory survey of the earth suffices to show that its human inhabitants are greatly diversified in their general aspect and character, in the stature and

symmetry of their bodies, in the complexion of their skin and the quality of their hair, in the form of the head and the cast of the features, in the languages they speak and the habits of life which they follow. Attempts have been made to reduce this vast variety into a few general classes; but the number of these classes has varied with the progress of information, and sometimes according to the favorite theories of the classifiers. The whole Race has been comprehended, and pretty fully described, under the following heads, by Blumenbach; though a somewhat different classification is now generally adopted.

The Caucasian Variety.—The characters of this class are: a white skin, varied by a florid tint, or inclining to brown; hair black, or of a light color, generally soft and waving. The face oval and straight, with expanded forehead, and generally large skull, narrow nose, and small mouth. The moral feeling and the intellect are of the highest order. This variety comprehends the Persians, Assyrians, Arabians, Jews, Phœnicians, inhabitants of Asia Minor, and all the nations of Europe (excepting the Fins), together with the Egyptians, Moors, and Abyssinians, in Africa.

The Mongolian Variety.—In this division, the skin is commonly of a sallow or olive tint, and in some cases nearly yellow; the hair is black, long and straight, seldom curling; the beard usually scanty; the iris black; the nose is broad and short, and the cheek bones broad and flat, with salient zygomatic arches; the skull is oblong, but flattened at the sides so as to give an appear-





ance of squareness; the forehead is low. The intellect is by no means defective, but the moral character is decidedly low. This class is mainly made up of the Mongol Tartar tribes. The Fins, Laplanders and Esquimaux also appear to be a remnant of some primitive Mongolian people; their peculiarities probably are owing to their locations.

Ethiopic or African Variety.—The black skin and woolly hair of the Negro form the well-known character of this race. The forehead is low and retreating, and the lower part of the face projecting like a muzzle; the nose is thick and flat, and the lips thick. This class comprises all the inhabitants of Africa, except those above mentioned as being Caucasian.

American Variety.—This includes all the aboriginal tribes of the continent of America, except the Esquimaux. A reddish-brown complexion; long, black, lank hair; deficient beard; eyes black and deep-set; receding brow; high cheekbones; prominent aquiline nose; small skull, with the apex high and the back part flat; large mouth and tumid lips; with fine symmetrical frames of middle height, form the chief physical characteristics of this race.

Malay Variety.—These are characterized by tawny or dark brown skins; coarse, black hair; large mouth; short, broad noses, as if broken at the root; flat expanded faces; with projecting upper jaws and salient teeth. The skull in this race is high, and squared or rounded, and the forehead low and broad. The moral character of the Malays, in general, is of an inferior

order. They differ both from the Negro and the Red Indian, being of a peculiarly active temperament, and fond of maritime enterprise. They are intellectual and ingenious. Borneo, Java, Sumatra, the Philippine Islands, New Zealand, the Polynesian and other isles, are inhabited by this variety of men.

From these marked differences between the various branches of the human family, and from the apparent fixedness or permanency of these differences, some of them having existed and been observed from the earliest periods of historic time, some Naturalists have been led to affirm that the inhabitants of the earth are of various and distinct species; that instead of there being but one race of human beings there are many races, each of which has had its own Adam and Eve. Professor Agassiz has put forth the opinion that, instead of the human family beginning with the creation of one man and one woman, a great number of individuals of each of the principal types of man were called into being, when the Race was created, possessing all those characters which their posterity afterwards inherited, and by which they are now mainly distinguished: but this writer appears not to have been settled in his views, having changed ground more than once. Sir R. I. Murchison has broached the idea, that the various races of man not only proceeded from different original stocks, but were introduced upon the earth at different dates or periods. Others, as Nott and Gliddon, assert that the races of man are essentially different creatures; that the Negro and Indian and some other low races are by

nature incapable of ever rising to the blessings of either religion or civilization; that they are not endowed with mental faculties adequate to the perception of religious sentiments, and, consequently, that they are formed for no higher destiny than the brutes that perish. "The whole of Africa," say these last writers, "south of 10° north latitude, shows a succession of human beings with intellects as dark as their skins, and with a conformation of skulls that renders all expectation of their future improvement and Christianization an Utopian dream."

It hardly need be said that these, and all similar views that assign a plurality of origin to the human race, are altogether at variance with the Bible, and utterly irreconcilable, not simply with isolated passages in it, but with its fundamental doctrine and with its chief and ultimate design. Throughout, the Sacred Volume recognizes in its history, and rests in its doctrines on the fact, that the whole human population of the globe has descended from one Father, Adam, whom God created in his own image, and from one Mother, who "was called Eve, because she was the mother of all living." Of this "one blood," the inspired Word affirms in sundry places and in diverse manners, "God made all nations of men for to dwell on all the face of the earth, and determined their times and the bounds of their habitation."

The great central doctrine of Revelation is, that in consequence of *one man's* transgression, all of every clime, color, condition and character have become sinners. And this sinful, corrupt, depraved character is

found to be the actual character of all mankind, without exception. No language can be plainer or more explicit than that of Revelation on this subject; and no fact can be more conspicuous and undeniable than human depravity in every region of the globe. "There is none righteous; no, not one. They are all gone out of the way; they are together become unprofitable. With their tongues they have used deceit. Their feet are swift to shed blood. Destruction and misery are in their ways. There is no fear of God before their eyes. All the world is become guilty before God." To limit these representations to any one race, or to any number of races, short of total humanity, is not merely to wrest the Scriptures from their obvious meaning, but to allow a principle of interpretation that would pervert or annul the meaning of all language, put darkness for light, and cloud with total obscurity everything that has been or can be written. It would be, moreover, to close our eyes to palpable evidence of the fact, which presents itself before us wherever we are and whithersoever we go.

The theory that nations have had different and distinct origins also sets aside the great scheme of Redeeming Grace. In reference to this, likewise, nothing can be plainer than the declarations of Revelation, that the provisions of this grace are made and meant alike for the whole human race, be they savage or civilized, Barbarian, Scythian, Bond or Free. "God so loved the world that he gave His only begotten Son, that *whosoever* believeth in Him should not perish, but have ever-

lasting life." Hence, the great commission is, "Go ye into all the world, and preach the Gospel to every creature"—aye, to *every creature*, to the Ethiop in his blackness and darkness and degradation no less than to the Scribes and Pharisees in the temple and the synagogue, to the nude and shivering Terra del Fuegian no less than to the nabob clothed in his purple and fine linen. No language can be more full, more explicit, more universal in its application than that which sets forth the offering of the great Atoning Sacrifice of the Son of God, and throws abroad over all the world the wide, warm welcome of his redeeming grace to all, whosoever will receive it: "Look unto me, and be ye saved, all the ends of the earth."

But it is unnecessary, on a point so obvious and so universally conceded as this, to multiply individual texts. We file in evidence the whole volume of God's Word—its types and predictions, its parables and promises, its warnings and entreaties, from the beginning to the end.

It is obvious, therefore, that the theories which would assign different origins to differing nations are opposed to the Word of God, and inimical to the purposes of His grace and mercy toward sinful men. They are, indeed, in their tendency repulsive to every feeling of humanity, and calculated to repress the noblest sentiments of philanthropy, and to paralyze every enterprise and effort to enlighten, elevate and save the ignorant, degraded and perishing tribes of humanity.

The question now before us, then, is one fundamental

in its importance, and vital in its interest. It is,—Are the inhabitants of the world all descendants of one common progenitor? Are they our brethrèn, of one flesh and one blood? Are they men of like passions and affections with ourselves? Did they all die in Adam, and shall they all be made alive in Christ? Is the Law of God binding on them as it is on us? Does the Gospel of the Son of God provide and proclaim Salvation to them as it does to ourselves? Do the glories of heaven and the woes of hell concern them as they concern us?—To these questions the theories that assign different origins to different nations return the answer, No; but to them all the Bible gives a most emphatic *Yes—yes; our Father is one and we are all Brethren.* We hope now to lay before the reader facts—abundant and indisputable facts—in confirmation of this doctrine of the Holy Book.

Before we proceed to specific arguments, we may just state, that in order to account for the prevailing differences between the inhabitants of the various regions of the globe, numerous and striking as these differences may be, we are by no means under the necessity of having recourse to the hypothesis that they must have originated in different and distinct stocks, or in so many Adams and Eves; another explanation, and one that is in entire accordance with ascertained facts, readily and naturally suggests itself. We often observe in a family, among the children of the same parents, very marked differences in their bodily constitution and mental faculties, in their tastes, dispositions and habits, and for which

no account, no explanation can be given by the science of man. And we may reasonably suppose that the same thing might have happened in the family of Noah. Through the inscrutable agency of God, and in accordance with his purpose in reference to the future population of the world, the three sons of Noah, "of whom the whole earth was overspread," may have been born with both physical and mental characters differing one from another; and herein, we may consistently hold, lay the *germs* of what, in the course of ages, under the moulding influences of climate, food, religion, culture, peace, war, oppression and slavery, developed into all the diversity of types now found among the world's population. Indeed, we detect in the sacred narrative, brief as it is, not a little to confirm us in this view. That these three sons of Noah were of quite different characters comes out very plainly in the transaction connected with their father's fall. Shem and Japheth show themselves possessed of qualities entirely different from those of Ham and his son Canaan; these were mean and sensual, those were reverent and noble. And in perfect harmony with all this was the prediction given concerning the destiny of their respective descendants. "Japheth should be enlarged"—as afterward appeared, to occupy an extended portion of Asia, and the whole of Europe. "In the tents of Shem God would dwell"—as it came to pass among the Hebrews. "Canaan should be their servant"—the descendants of Ham should be subject to the descendants of both Shem and Japheth; "servants of servants should they be:" and who does

not know that this has been the sad fate of the sable population of Africa in all generations? From the distinctive peculiarities of the three sons of Noah, therefore, may have descended the three leading types of man, under which, our highest ethnological authorities, Cuvier and Dr. J. C. Prichard and Dr. R. G. Latham, have classified the whole human race.

We now advance to particulars, and shall notice first the main points of *Difference* between the races of man, on which are based the arguments for plurality of origin; and then their points of *Similarity* and *Likeness*, which we believe prove mankind to be of one species and originally of one blood.

POINTS OF DIFFERENCE IN THE RACES.

THERE are found, as already stated, numerous points of difference, more or less marked and important, between the native inhabitants of the several climes of the globe. And we note,

1. *The difference in the Form of the Skull.* Dr. Prichard has shown that there are but *three* leading types of cranial conformation—the Oval, the Pyramidal and the Prognathous—of which all others are variations or combinations.

The *Oval* or *Elliptical* form of skull is distinguished by the symmetry of its outlines and proportions, there being no excess either of prominence or depression. The cranial cavity is large, the forehead full and elevated,

* Comp. *Dissertations on the Prophecies*, by Bp. Newton.

the face small in proportion; thus indicating the predominance of the intellectual powers over the instinctive propensities. To this type belong those nations of Asia and Europe described as Caucasians, and are the most distinguished for their intellectual advancement.

The *Pyramidal* Skull corresponds with that class termed Mongolian, but is most characteristically seen in the Esquimaux. The striking peculiarity of these skulls is the great lateral prominence of their cheek-bones and zygomatic arches, together with an extreme flatness of the upper half of the face, whilst the forehead rapidly narrows at its highest part; so that, on a front view, the portion of the skull above the line joining the cheek-bones has an almost pyramidal form, that line serving as the base. The orbits of the eyes are large and deep; and the bones surround them in such a manner that, in most instances of this conformation, the opening of the lids has a decided obliquity, the inner angle being directed downwards. The whole face, instead of approaching the oval as in Europeans, is of a lozenge shape; and the larger proportion which it bears to the capacity of the cranium indicates in the pyramidal skull a more ample extension of the organs of sensation. The greater part of the races of this type are nomadic; some of them wandering with their flocks and herds over the vast plains of High Asia; whilst others creep along the shores of the Icy Sea, supporting themselves by fishing.

Of the *Prognathous* Skull the distinguishing feature is the forward prominence of the jaws. This character is most marked in the Negro races of the Guinea coast,

and in some of the Polynesian and Australian races. From the common appearance of the skull, it might be supposed that it had been compressed at the two sides; consequently, instead of being flattened in front, as in the preceding case, the bones of the face project far forwards, and the occiput backwards. This projection is especially manifested in the upper and lower jaw-bones; and its effect is increased by the circumstance that the front teeth do not spring vertically from their sockets, but have a forward slant. There is a lack of elevation in the forehead, but not in the cranial capacity as a whole, there being a backward elongation of the skull. The sockets of the eyes and the cavities of the nose are unusually large. The organs of hearing, too, seem to be very largely developed. This configuration is to be met with, in varying degrees, among the greater part of the nations of tropical Africa, and is generally associated in our minds with the idea of degradation. People of this type are for the most part hunters, depending for their food on the spontaneous productions of the soil, or the precarious fruits of the chase. They are but little acquainted with the arts, and stand low in social life.

Now, to ascertain the bearing of the existence of these several types of skulls on the subject of Unity or Plurality of origin, two questions must be answered—Can lines be drawn according to these types dividing the whole of mankind into so many distinct classes, such as different species usually are? and, Are these different conformations permanent, having been transmitted from

generation to generation without essential variation, as is found to be the case with different species? If these questions can be answered in the affirmative, it must be admitted that they favor the idea of specific distinction or a plurality of origin; but if it can be shown that both facts and history return a negative answer, they will offer a strong corroboration of the Bible doctrine that "God has made of one blood all nations of men for to dwell on all the face of the earth."

First, then, can lines be drawn according to the leading types of skull dividing the human kind into so many distinct classes, such as different species usually are found to be? or, do we, in passing from one group of nations to another, find them undergoing such gradual modifications as to render it impossible to draw any definite line between them?

When we examine the cranial conformation of the whole Caucasian group of nations, we find that, although the elliptical type prevails among them, it is in very different degrees of development. Certain races manifest a decided tendency towards the pyramidal, others toward the prognathous character; and considerable variations may be seen among individuals of the same race. If the Mongolian group be surveyed, the peculiarities of the pyramidal skull will be often found so much softened down, as to approach the elliptical form; sometimes throughout the whole of certain races—occasionally only in individuals. Between the African nations the difference is still more remarkable. Some of them present the prognathous type in its most repulsive development;

in other cases, the pyramidal form is nearly as evident as among many of the northern Asiatics; others again exhibit a decided tendency towards the more elevated and symmetrical type of the Caucasians. There is an equal dissimilarity in cranial form among the widely-spread and isolated tribes which people Oceania. Whilst the skulls of the Malayan portion of this population are referable to the pyramidal type rather than to any other, there are savage races in and around Australia which are nearly, if not quite, as prognathous as the African Negroes; at the same time, in many parts of the Polynesian Archipelago, we meet with tribes of higher civilization, whose skulls can scarcely be distinguished from the best European forms. So, among the American races, the Esquimaux is the exaggeration of the pyramidal type; yet in some of the Southern nations the character of the skull inclines to become prognathous; in others elliptical. Such, indeed, is the extent of variation that the types, which appear to be most remotely separated, are ascertained to be really connected by such a gradation of intermediate or transitional forms, that it is frequently impossible to say to which of the types a particular specimen should be referred.

Thus clearly does it appear that no line can be drawn according to the conformation of skulls dividing mankind into specific and distinct races. This, indeed, is acknowledged by the most zealous advocates of distinct origins to be utterly impossible; even Nott and Gliddon, in their *Types of Mankind*, confess that the types are hopelessly commingled:—"It would be a vain task,

say they, at the present day to attempt any unravelling of this tangled thread, and to make anything like a just classification of types." Yet, on their theory of distinct origins or stocks, each race should have fixed and definite characters, common to all its subdivisions, and distinguishing them from those of other races; whereas, in nature, in the living population of the globe, on the contrary, we find the characters shading off in nations, in families, in individuals, so as to approach a common type. In view of this fact, the writers last quoted make the admission that "no classification of races yet put forth has any foundation whatever in nature." What grounds then have we to believe in the existence of what can neither be located, nor described, nor defined?—This fact alone, then, invalidates the theory.

But, second: Are these different conformations permanent? that is, have they been transmitted from generation to generation without essential variation, as is found to be the case with different species of animals, at least within historic times? or, Have we evidence of departure from one type and approach toward another, in the annals of any branch or branches of the human family?

The advocates of distinct origins, it is admitted, can adduce many facts and some records that seem to favor their side of the question; and it is also freely acknowledged that the opposite view is not altogether without its difficulties, and that the existence of Man in so many varied races is, in many respects, a great mystery. *When and How* did the human varieties begin are

questions that have not as yet been answered to the entire satisfaction of any. Nevertheless, a mass of facts has been gathered within the past half century from the monuments, history, and habits of various nations, which we believe conclusively prove the origin of all races to be one and the same.

The Negro perhaps is the type most frequently cited as an example of the fixedness and permanency of physical features and mental character. The existing Ethiopian physiognomy is said to agree precisely with the representations transmitted to us from the remotest periods, in those marvellous pictures, whose preservation in the tombs and temples of Egypt has revealed to us so much of the inner life of one of the most ancient civilized nations of the world. In one of the most perfect of these paintings, a great Egyptian Monarch is symbolically represented as ruling with the power of life and death over subject races; and these are supposed to be depicted with accurate and characteristic likeness. Conspicuous in this group is one figure, a Negro, painted to the life both in form and color, which, it is said, proves that the race which departs most widely from the European type, possessed at that remote period exactly the same characters which mark it at the present day. The Negro kneels at the feet of Sethos I., in the same attitude of bondage and submission which typifies only too faithfully the enduring servitude of his race. The blackness of color, the woolliness of hair, the flatness of nose, the projection of the lips, which are so familiar to us, are all clearly depicted. At periods not

much later in the history of this country, we have elaborate representations of battles with Negro nations—representations which are thought to go far to show that the race was then more able to maintain a contest with other races than it has ever been in recent times.

Without wishing or designing to detract anything from the real value of these and other interesting discoveries made in this ancient land, we must apprise the reader that the evidences derived from such sources are by no means so conclusive in regard to the *permanency of human types* as some would have us believe. Indeed, competent judges, who have gone and examined these pictorial representations for themselves, have come away from them with very different and even opposite impressions. Mr. Charles Darwin has this Note on the point—“With respect to the figures of the famous Egyptian caves of Abou-Simbel, M. Pouchet says that he was far from finding recognizable representations of the dozen or more nations which some authors believe that they can recognize. Even some of the most strongly marked races cannot be identified with that degree of unanimity which might have been expected from what has been written on the subject. Thus Messrs. Nott and Gliddon state that Rameses II. has features superbly European; whereas Knox, another firm believer in the specific distinction of the races of man, speaking of the same monarch, insists in the strongest manner that he is identical in character with the Jews of Antwerp. Again, while looking in the British Museum with two competent judges, officers of the establishment, at the statue of

Amunoph III., we agreed that he had a strongly negro cast of features; but Messrs. Nott and Gliddon describe him as a hybrid, but not of negro intermixture.*

Cuts and profiles of Egyptian statuary and skulls are often offered in like manner, in works on this subject, as evidence of the fixedness of human types. "We object to these," says an able Reviewer of Nott and Gliddon's *Types of Mankind*; "for what evidence have we of the accuracy of these original portraits made by those rude artists, according to Mr. G., six thousand years since? Some were coarse colossal statues, some bas-reliefs, so marred and distorted, that nothing could be made of them until the outer coatings were taken off. Is there no chance here that a slip of the pencil, an unskilful hand, a vagrant fancy, or a crude conjecture may have distorted the lineaments of the face, caricaturing one and lending new traits to another? In truth, the originals themselves are grotesque, not to say burlesque, caricatures of the human form. The authors themselves acknowledge this difficulty, and, in one instance, have given three different cuts of the same subject, 'in proof of how artists differ.' These cuts would hardly allow the original to be cousin-german to himself. And yet these are the scientific demonstrations given to prove, that the Swarthy or Black Egyptian, 'with curly or frizzled hair, tumid lips, slender limbs, small head, with receding forehead and chin,' differed, *toto cœlo*, from the Negro!" †

* *Descent of Man*, Vol. I., p. 209.

† *Presbyterian Review*, Vol. III., p. 187.

These statements may aid the reader in deciding for himself what weight should be allowed to this class of evidences in proof that the Negro features and character are fixed and permanent. Allowing that this race has preserved its general characteristics through this lengthy period, that fact would only go to show permanency *under the same conditions*, viz., a torrid clime and a state of barbarism and slavery, which have been the common lot of this people in every age. That the Negro Race retain, in the main, the same physical type and the same temperament, therefore, is proof, not so much of the unchangeableness of the type, as that their habitation and social condition have continued the same. The social no less than the physical condition of man is concerned in determining his characteristics. The conformation of the skull and other bodily features, according to the high authority of Dr. Prichard, are in general found to correspond with the stages of *civilization*. There are in mankind, he tells us, three principal varieties in the form and features of the head—the prognathous, the pyramidal, and the oval—which are most prevalent respectively, in the savage or hunting tribes, in the nomadic or wandering pastoral races, and in the civilized and intellectually cultivated divisions of the human family. And there are numerous instances of actual transition from one of these shapes of the head to another, and these alterations have taken place in nations who have changed their manner of life. That the negroes, therefore, should have retained their general type, while their social condition and local habitation

have remained the same, is precisely what might have been expected. If through these three thousand years they had enjoyed the blessings of civilization their physiognomy to-day might have been very different from what it is. Wherever Negroes have made progress in civilization their features have undergone a corresponding change. The most elevated forms of skull among the African nations are found in those who have emerged, in a greater or less degree, from their original barbarism. This has chiefly taken place through the influence of the Mohammedan religion, which prevails extensively among the people of the central and eastern part of Africa.

To all this it may be said that, the physiognomy of Negroes continues identically the same from parent to child even where they have been transplanted to a temperate climate and among civilized people. We reply that the condition of such in these new circumstances has been anything but favorable to amelioration of body or improvement of mind. The change in general has been but faintly for the better, their lot, for the most part, being that of toiling slaves in rice-fields or on cotton and sugar plantations. Besides, it is obvious that the time which has elapsed since their removal is as yet too short to expect any considerable alteration of cranial configuration. Many of the Negroes now living in the West India islands are children of natives of Africa, and a large proportion of the Negro population of the United States are removed by no more than two or three descents from their African ancestors. But according to

the concurrent testimony of disinterested observers, both in the West Indies and in the United States, an approximation of physiognomy to the European model is progressively taking place. The change is most apparent in the most favorable circumstances—in such as are brought into closest and most habitual relation with the whites, as in domestic servitude—we mean, of course, without any actual intermixture of races.

That the cranial form of races is changed and changed decisively by change of climate, soil and manner of life we have undeniable historical evidence. A striking example is afforded by the cranial conformation of the Turks of *Europe* and *Western Asia*. It closely resembles that of the great bulk of the European nations, but departs so widely from that of the Turks of *Central Asia*, that many writers have referred the former to the Caucasian rather than to the Mongolian stock. Yet historical evidence sufficiently proves, that the Western Turks originally belonged to the Northern Asiatic group of nations, with which the Eastern portion of their nation still remains associated, not only in its geographical position, but in its physical characters and habits of life; and that it is in the *Western* branch, not in the Eastern, that the change has taken place, which amounts to nothing less than the entire substitution of a new type for the original one. So complete a change can scarcely be attributed to any other cause than civilization and social improvement; the constant tendency of which is to smooth down the excessive prominences both of the pyramidal and prognathous skulls, and bring them

towards the symmetry of the elliptical. The Eastern Turks, retaining the nomadic habits of their ancestors, have retained also their cranial conformation.

We have a similar instance in the Magyar race, of which the Hungarian nobility is composed. This race, which is not inferior in physical or mental characters to any in Europe, is proved by historical and philological evidence to have been a branch of the great Northern Asiatic stock, closely allied in blood to the stupid and feeble Ostiaks and the untamable Laplanders. About ten centuries ago they were expelled by Turkish invasion from the country they then inhabited, which bordered on the Uralian Mountains; and they in their turn expelled the Slavonian nations from the fertile parts of Hungary, which they have occupied ever since. Having thus exchanged their abode from the most rigorous climate of the old continent—a wilderness where Ostiaks and Samoiedes pursue the chase during only the mildest season—for one in the south of Europe, amid fertile plains, abounding in rich harvests, they laid aside the rude and savage habits which they are recorded to have brought with them, and adopted a settled mode of life. In the course of a thousand years, their type of skull has been changed from the pyramidal to the elliptical, and they have become a handsome people, of fine stature and regular European features. There is no reason whatever to regard this improvement as arising in any considerable degree from an intermixture of races; the Magyars being to this day distinct from the other inhabitants of Hungary. Nor would it have been

produced by mere change of place, without civilization. For among the Laps—who, though inhabiting Europe, retain the nomadic habits of their Mongolian ancestors—the pyramidal form is still preserved.

But, we can both strengthen and illustrate our argument from the history and habits of a people more familiar than either of the foregoing—namely, of the Irish. There are certain districts of Ireland, chiefly inhabited by the descendants of the native Irish driven by the British from Armagh and the south of Down, about two centuries ago. These people, whose ancestors were well-grown, able-bodied and comely, are now reduced to an average stature of five feet two inches, are pot-bellied, bow-legged, and abortively featured; and are especially remarkable for open projecting mouths, with prominent teeth and exposed gums, their advancing cheek bones and depressed noses bearing barbarism on their very front. In other words, within so short a period, they seem to have acquired a prognathous type of skull, not unlike the savages of Australia.* It is very noticeable, indeed, how close is the resemblance between the lowest classes of the Irish population and the natives of Australia, as depicted by recent travellers. It is an untoward circumstance in human nature, that alterations for the worse appear to take place much more quickly, and much more certainly, than alterations for the better.

Colonies from Europe also exhibit numerous instances

* See *Dublin University Magazine*, No. 48.

of physical change. The descendants of English settlers in the American States display a considerable variation in general form and aspect from the parent nation. The children of European settlers in New South Wales are tall, thin, and weaker than their progenitors. In the West Indies, some distinct new peculiarities of structure have been observed in the descendants of English settlers: their cheek-bones are higher, and their eyes deeper set in the head, than those of the English nation generally; in these respects, they approximate to the form of the aboriginal races of the American continent and islands; and it has been pointed out that such a form is useful in protecting the eyesight from the glare of the tropical sun.

The foregoing facts and arguments offer sufficient proof that the existing and distinctive types of mankind are not fixed and permanent, and that unlike as they are in their cranial forms, they may have descended from one and the same original stock.

2. *Difference in the Color of the Skin.*—This is the most striking difference between the races of Man, and is by many regarded as a convincing evidence that they have proceeded from different origins. That the Ethiopian should change his skin—that is, that a black race should become of any other color—is commonly regarded as impossible as for a man to “add one cubit to his stature.” Hence the retention of the characteristic hue of a race in the descendants of individuals who have long since migrated or been carried into a temperate climate, is continually appealed to as clear evidence of a separate and distinct origin, or that the black man

always has been a black man. But this opinion will not stand the test of facts and history any better than that of the fixed form of the skull. We find that color or complexion is extremely variable, being affected by numerous agencies, such as climate, food and habits of life. Hence tribes belonging to the same great branch of the human family are found frequently to vary in hue according to the peculiarity of their local habitation, and their manner of life.

All travellers who have visited the high lands of Arabia describe the inhabitants as having light complexions, their eyes being often blue and their hair red. The Arabs near Muscat are of a sickly yellow hue; those of the neighborhood of Mecca are of a yellowish brown; while those of the low countries bordering on the Nile are almost jet black.

We find a similar variation of shades among the Kabyles, a people that inhabit the northern borders of Africa. Here are tribes connected by the closest affinity of language, and who agree also in every other important physical character, yet differing widely in their complexion. Although the Kabyles in general have a swarthy hue and dark hair, yet the tribe of Mozabi is described as being remarkably white; and the lofty table-land called Mount Aurasius is inhabited by a tribe so fair and ruddy, and with hair of so deep a yellow, that they have been compared to the Germans. On the other hand, the Tuaryk tribes, bordering on the Great Desert, have a complexion as black as that of the darkest Negro.

The same is true of the Jews. While the descendants of Abraham are everywhere recognizable by certain peculiarities of physiognomy, yet they exhibit a great variety of complexion among them. In England, blue eyes and flaxen hair are not unfrequent; but a light brunette hue with black hair is most common. In Germany and Poland, the ordinary complexion is more florid, with blue eyes and red hair. On the other hand, the Jews of Portugal are very dark; while those who have been settled from very remote times in Cochin and the interior of Malabar, are so black as not to be distinguishable by their complexion from the native inhabitants. It is both a curious and an interesting fact, that at Mattacheri, a town of Cochin, there is another colony of Jews, who arrived in that country nearly seven centuries later; these are several shades lighter in their complexion than the former, and are called Jerusalem Jews; and the fact that they have not yet been blackened as deeply as their brethren shows that *time* is a necessary condition in the coloring process. From all these facts it may be stated as a general proposition, that the complexion of the Jews tends with time to assimilate itself to that of any nation in which their residence has been cast. The same holds equally true, of course, of every other nation.

Among the Hindoo nation are to be found the most marked diversities of complexion; some are as black as Negroes, some are of a copper color, others a little darker than the inhabitants of southern Europe, and others have actually fair complexions with blue eyes, and

auburn or even red hair. These diversities appear to be connected with two sets of conditions, as their producing causes. The first place must be assigned to the marked differences of climate which prevail between the mountainous elevations of Kashmir, and the low plains bordering the great rivers of India. Castes, also, no doubt, have their influence, as they serve to perpetuate the same modes of life in particular families from generation to generation.

If from the Asiatics we turn to the nations of Africa we shall encounter a similar class of facts. It is now well known that there exists a great diversity of complexion among the different inhabitants of this vast continent. Some of the Kafir tribes, among which are often to be met high foreheads and prominent noses, have also light brown complexions and reddish hair; yet there is no ground whatever for attributing to them an origin distinct from that of the proper Negro races, with which they are connected in different degrees of affinity. There are tribes even upon the Gold and Slave Coasts, considerably lighter than ordinary Negroes. The Hottentot has a large admixture of yellow in his complexion; whilst the Fulahs of central Africa are of a dark copper color.

Again: The aborigines of the American continent, though called "Red Men," are by no means all of this color. While some of the North American Indians are copper-colored, others are as fair as many Europeans; others still are of a brown or yellow complexion; and others yet nearly, if not quite, as black as the

Negroes of Africa. Oftentimes, no lines can be drawn between tribes.

In several of the Polynesian Islands the complexion of the mass of the people, who are continually exposed to the influence of the sun and air, grows darker, the features ugly, and the hair somewhat crisp, with a decided approach towards the Pelagian Negro Type. Yet among the very same people, the superior caste, who pass their days in ease, and are carefully sheltered from the tropical sun, have a fair complexion and an almost European cast of features. All intelligent persons who have long resided in the Pacific islands, under circumstances favorable to accurate investigation, appear to have come to the conclusion that these differences can only be accounted for by the diversified agency of climate and physical influences on the different branches of a race originally the same.

From all the foregoing facts it must be obvious that if *Color* be once adopted as a test of separate origin, we must suppose that tribes speaking the same language, having the same customs and traditions, and closely related in general conformation, sprang, nevertheless, from ancestors who had no relation to each other; and we must assign a distinct pair to almost every island or group of islands, and in some instances even two or more pairs to a single island. Such are the difficulties of a diversity of origin.

In further confirmation and illustration of our argument from color, we may adduce a few additional *historic* evidences. The Barabra, or Berberines of the higher

parts of the Nile, appear from researches made into their history, to be the descendants of the Nobatæ, who were brought fifteen hundred years ago, from an oasis, in the interior of Africa, by order of Dioclesian, to inhabit the valley of the Nile. The district from which they were taken appears to have been Kordofan; the present inhabitants of which are true Negroes, and still preserve and speak the Barabra language. The Berberines live on the banks of the Nile; and wherever there is any soil they plant date trees, set up wheels for irrigation, and sow dhourra and leguminous plants. At Cairo, where many of them resort, they are prized for their honesty. Now, this advance in civilization has been accompanied by a considerable change in complexion; for their present physiognomy and hue of skin are very similar to those of the ancient Egyptians; their hair, too, is long and but slightly crisped. This alteration could not have been brought about by any commixture with the Arabs or any other people of the Nile valley, for the Berberines have always kept themselves distinct.

We have a similar instance in the Funge, who made themselves masters of Sennaar about three centuries ago; although originally negroes of the Shilukh nation, they no longer present the physiognomy or complexion of that race, but approach much more nearly the Berberines. There appears in both cases to be a special tendency towards a red complexion, and even red hair.

Again: In Northern India, there are tribes of mountaineers descended from families which migrated at remote periods from the plains of Hindostan to high

tracts in the Himalaya, especially towards the sources of the sacred rivers. Many of these have so departed from the ordinary Hindoo aspect as to have acquired a fair complexion, with blue eyes, and auburn or red hair. The most marked change, however, has taken place in the Siah-Posh people, who separated from the Hindoo stock at a very early period. According to the account given by Sir A. Burnes and Mountstuart Elphinstone, the Siah-Posh are a people of exquisite beauty, with regular Grecian features, blue eyes, arched eyebrows, and fair complexion; they have no resemblance to the Affghan or Cashmirian people near whom they dwell.

If now we review the preceding facts, it will be sufficiently evident, we think, that *Color* or *Complexion* affords no support to the opinion that the different races of man have proceeded from different origins. We have seen that the Arab, removing to and remaining in the country of the Negro, becomes of Negro blackness; that the Negro transplanted to the banks of the Nile assumes the hue of the Egyptian; that the Jews who have taken up their abode among the northern nations of Europe have exchanged their native dark complexion for one that is fair and even florid, whilst their brethren, who have wandered to the torrid climate of Cochin, have grown black as the blackest of the natives; that Hindoos, who, ages since, migrated to the high lands of the Himalaya mountains, have become fair as the Europeans who have come thither from the far north; that the original population of the American continent, whose geographical distribution and affinity of language afford strong pre-

sumption of a common origin, yet greatly vary in the shades of their complexion; and that the inhabitants of the islands of the Pacific are dark or fair, comely or ugly, according to the ease or hardship of their lot in life.—From all this it is clear that *Color* offers no proof whatever of distinct national origins; that widely as the inhabitants of the globe now differ in this respect, they may have all descended from one common father; and that these differences of complexion owe their existence to geographical position, to elevation above the level of the sea, to food and habits of life, more than to any other assignable causes.

3. *Difference in the Quality of the Hair.*—The color and the texture of the Hair differ as widely in the various races of mankind as do their complexions. Both the color and the quality of the hair seem to stand in close relation to the color and character of the skin from which it grows.

The greater portion of the habitable globe is peopled by dark-haired races. Europe is the chief seat of light-haired people; indeed, they seem to be almost confined to its limits, and within those limits to be cooped up for the most part in its northern countries.

The fairest-haired inhabitants of the earth are to be found north of the parallel of 48° north latitude—that is, in England, Belgium, Northern Germany, and the greater portion of Russia. Between the parallels of 48° and 45° there is a debatable territory of dark brown hair, which includes northern France, Switzerland, and part of Piedmont, passes through Bohemia and Austria Proper, and

touches the Georgian and Circassian provinces of the Czar's empire. Below this line again, Spain, Naples, and Turkey, forming the southern extremities of the map of Europe, exhibit the genuine dark-haired races. So that in fact taking this quarter of the globe broadly from North to South, its people present in the color of their hair a perfect gradation—the light flaxen of the colder latitudes deepening by imperceptible degrees into the blue-black of the Mediterranean shores. To this regular gradation, however, there are some obvious exceptions, among which is to be reckoned Venice, which, though in southerly latitude, has always been famous for the golden beauty of its hair.

The United States and the Canadas, like the cities of London, Paris and Vienna, contain within them hair of all shades of color, the population being made up of many differing nations.

The same physical causes, no doubt, are concerned in determining the color of the hair as decide the complexion of the skin.

An examination of the structure of the hair shows that the difference of color is entirely owing to the tinct of the fluid which fills the hollow tube in each hair. This tinct or pigment shows through the cortical substance in the same manner that it does through the epidermis of a Negro. Hair is in fact but a modification of the skin.

The pigment cells of the hair have been examined with great care by Liebig, who has found considerable difference in their constitution according to their color.

From his analysis it would appear that the beautiful golden hair owes its brightness to an excess of sulphur and oxygen with a deficiency of carbon. The black hair is indebted for its jetty aspect to an excess of carbon and a deficiency of sulphur and oxygen. The pure whiteness of the hair of Albinos is to be attributed to the entire absence of the ingredients that constitute the pigment—an absence which extends to the choroid coat of the eye and also to the iris.

There is nothing in the character of human hair that can be regarded as a distinction of race or species. It is as variable and diversified as the color of the skin. The African nations have been collectively termed “woolly-haired;” but it is clearly proved by microscopic examination that the hair of the Negro is not *wool*, and that its structure differs in nothing from that of the fairer races, save in the greater quantity of pigmentary matter contained in its interior—as is the case with jet black hair in our own people. The crisp twisted growth of negro hair is the only sign by which it can be really separated from the straight and flowing hair of Europeans.

Among the nations of Africa, there are those, though in all respects of the Negro type, who yet have long and flowing hair. On the other hand there are many Europeans having no admixture of Negro blood, with hair so crisped and frizzled as almost to deserve the epithet of woolly.

The Arabs, on the high lands of their native Arabia, have comparatively light hair, often inclining to red; in the valley of the Jordan, a locality of intense and con-

stant heat, Mr. Buckingham observed that they had darker skins and coarser hair than he had observed elsewhere; and in the low countries bordering on the Nile, their hair is universally of jet black.

The Jews in England, many of them at least, have flaxen hair; in Germany, often inclining to red; while in more southerly countries it is black.

The Cinghalese are described by Dr. Davy as having hair varying in color from light brown to black; the prevalent hue of their hair and eyes is black, but hazel eyes and brown hair are not very uncommon; gray eyes and red hair are occasionally seen, though rarely; and sometimes the light blue or red eye and light flaxen hair of the Albino.

The Berberines while dwellers of Kordofan had the true Negro hair, but centuries of residence on the banks of the Nile has taken most of the curl out and converted it into long and flowing tresses.

German families settled in Georgia, according to Khanikof's account, have acquired in the course of two generations dark hair and eyes.

In the Mandan tribe of American Indians, about one in ten or twelve of the members of all ages and both sexes have bright silvery gray hair, which is hereditary; this hair is as coarse and harsh as that of a horse's mane, while the hair of other colors is fine and soft.*

But we need not further multiply facts of this kind—the foregoing instances sufficiently prove that neither

* See Catlin's *North American Indians*, Vol. I., p. 49.

the quality nor the color of the hair in any country, or among any people, is so uniform or so permanent as to constitute it a specific distinction between them; on the contrary, we have seen that, like the complexion of the skin, it varies greatly both in its texture and in its hue, according to habits and external physical circumstances.

From all that has been said in the preceding pages we are warranted, then, to draw these two conclusions—First, that the differences observed in the form of the skull, in the color of the skin, and in the quality of the hair, of the various races of men, do not justify, much less prove, the assertion that they have proceeded from distinct origins; Second, that these differences all may be accounted for by the prolonged influence of geographical positions, of elevation above the level of the sea, of the dryness or dampness of the atmosphere, and of savage or civilized habits of life.

We now advance to lay before the reader evidence of a more *positive* character that all mankind are of one species, and descended from one and the same stock.

POINTS OF IDENTITY IN THE RACES.

THOUGH the various Races of Man, in their outward appearance, differ in many respects, as we have just seen, yet in their organization, in their bodily functions, and in their mental and moral faculties, they are found alike in every essential particular. In all respects they exhibit the usual tests of specific identity; and we offer as our first argument for the unity of mankind that—

1. *The human Race exhibits no organs, or functions, or*

features, by which any certain or definite lines can be drawn dividing them into distinct species. This is evident from the fact that there is the greatest possible diversity among capable judges on this point. Virey divides them into two races, Jacquinet into three, Kant into four, Blumenbach into five, Buffon into six, Hunter into seven, Agassiz into eight, Pickering into eleven, Bory St. Vincent into fifteen, Desmoulins into sixteen, Morton into twenty-two, Crawford into sixty, and Burke into sixty-three. This diversity of judgment among eminent naturalists plainly shows that the human varieties are so closely related and graduate so insensibly into each other that no clear distinctive characters can be discovered between them. This Mr. Darwin pronounces "a most weighty argument against treating the races of Man as distinct species." "Every naturalist," says he, "if of a cautious disposition, will unite all the forms which graduate into each other as a *single species*; for he will say to himself, that he has no right to give names to objects which he cannot define."

2. *The great Laws of the Vital Functions are the same in all the varieties of Man.* The periods and duration of life, the economy of the sexes, and the phenomena of parturition and reproduction are constant and uniform in all the races. In the extreme of age and in the average duration of life, under similar circumstances as to climate and mode of life, there is no difference. This is true, also, of the period at which the body attains its full development; of that at which the capability of reproduction is first manifested in the female, and of that

at which it ceases. The slight differences which are observable as to these particulars among the several races are not greater than among individuals of the same race or nation under similar climatic influences. The term of gestation, which is one of the most definite of all the periodical phenomena of life, and which frequently differs widely in two species nearly allied to each other, is exactly the same in every one of the human races.

3. *The human races, without exception, are fertile one with another, and produce offspring equally fertile, "inter se," which is held to be a leading test of specific identity.* The proof of this is abundant in every quarter of the globe. In our own country we have every shade of admixture between the Whites and the Blacks, between the Whites and the Indians, and between the Indians and the Negroes. In Brazil we behold an immense mongrel population of Negroes and Portuguese and Indians. In Chili, and other parts of South America, we see the whole population, consisting of Indians and Spaniards, blended in various degrees. In many parts of the same continent we meet with the most complex crosses between Indians, Negroes and Europeans; and such triple crosses are regarded as the severest test of the mutual fertility of the parent individuals. In Australia and Tasmania we encounter a mixed breed between the aborigines and the European settlers. In one island of the Pacific we find a small population of mingled Polynesian and English blood; and in the Viti Archipelago a population of Polynesians and Negritos crossed in all degrees. Analogous cases may be found in South Africa, in India,

in China, and, in fact, wherever different races have come in contact for any length of time. Here, then, we have the most decisive test, and have it too in all forms and degrees, that the various races of mankind are of one species and of one blood.

4. *All the Races of Man possess the same Intellectual Faculties and the same Moral Sense.* On this point we find in the *Edinburgh Review* the following concise and lucid remarks:—"We find in the lowest tribes of humanity as in other races, unequivocal indications of the same moral and intellectual nature as that which the most civilized races of men exhibit; these indications becoming more obvious, the more complete our knowledge of their habits, not merely of action, but of thought. We can trace, in short, among all the tribes of the globe the same rational human nature—the same capacity for generating abstract ideas, and thus arriving at general principles, which is a distinguishing attribute of Man. So, again, we discover in all of them the same elements of moral feeling; the same sympathies and susceptibilities of affection; the same conscience or internal conviction of accountableness, more or less obscurely developed; the same sentiments of guilt and self-condemnation, and the same desire of expiation. These principles take very different forms of expression, even in civilized life; much more, therefore, ought we to be prepared for finding nothing more, even among the specimens of uncivilized barbarism, than the mere elements of a higher understanding and of a nobler nature, than that which they have at present reac-

But the rudiments are there; though not always in the same degree of forwardness for being moulded to the institutions of a more regular society; for the development of the intellectual powers under a rational education; and for that growth of the moral and religious sentiments which Christianity is pre-eminently fitted to promote in every mind that opens itself to its benign influence.

“The aborigines of Australia were long supposed to be at the bottom of the scale of humanity, not merely as regards their physical condition, but to be deficient in their intellectual and moral faculties, and to want even the rudiments of any religious impression. More intimate acquaintance with them, however, has fully proved the fallacy of such statements. It is remarkable, too, that they possess many singular institutions, more resembling those of the North American Indians than of any other nation known to us. One great obstruction to the improvement of their social state we are told consists in the great complexity of their landed tenure—the perverted ingenuity of which would do credit, it is said, to the genius of an astute lawyer.

“It has been frequently said that the Hottentots differ from the higher races in their incapacity to form or to receive religious ideas. This, however, is by no means true. Though the early endeavors to introduce Christianity among them met with the same obstinate resistance as has been the case in almost every similar instance, yet it is a memorable fact, that when the attempt was perseveringly made and rightly directed,

the Hottentot nation lent a more willing ear than any other uncivilized race had done, to the preaching of Christianity; and no people has been more strikingly and speedily improved by its reception,—not only in moral character and conduct, but also in outward condition and prosperity. ‘Perhaps,’ says Dr. Prichard, ‘nothing in the account given of them is more remarkable than the fact, that so strong a sensation was produced among the whole Hottentot nation, and even among the neighboring tribes of different people, by the improved and happy condition of the Christian Hottentots, as to excite a desire for similar advantages. Whole families of Hottentots, and even of Bushmen, set out for the borders of Kafirland, and even performed journeys of many weeks, in order to settle at Gnadenthal. It is a singular fact in the history of these barbarous races of men, that the savage Bushmen, of their own accord, solicited from the Colonial Government, when negotiations were opened with them with a view of putting an end to a long and bloody contest, that teachers might be sent among them, such as those who had dwelt among the tame Hottentots at Gnadenthal. History probably furnishes few parallel examples of a savage people, in treaty with a Christian power, making it one of the conditions of peace, that Missionaries should be sent among them to instruct them in Christianity.’

“Though the Negro, generally, is at present far behind, yet under favorable circumstances, the intellect and moral character of individual Negroes have been elevated to the European standard. An enlarged ac-

quaintance with the African character has led many persons to the belief that our boasted superiority is, after all, more intellectual than moral; and that in purity and disinterestedness of the affections, in child-like simplicity and gentleness of demeanor, in fact, in all the milder graces of the Christian temper, we may even have much more to learn of the despised Negro. 'I should expect,' said Channing, 'from the African race, if civilized, less energy, less courage, less intellectual originality, than in ours; but more amiableness, tranquillity, gentleness, and content.' They might not rise to an equality in outward condition, but would probably be a much happier race. We have ourselves had considerable opportunity of comparing the capacity of Negro children with that of the lower class of our youthful town population; and we have no hesitation in saying that it is in every respect equal, and that there is, if anything, a superior docility on the part of the Negro."

The correctness of the above statements is abundantly established by well-authenticated facts, and it will not be out of place here to present two or three examples.—Towards the close of the last century a colored man in the State of Maryland, of pure Negro blood, whose name was Richard Banneker, acquired great celebrity for his proficiency and skill in mathematics. He was entirely self-taught. Having directed his attention to the study of astronomy, he at length composed an Almanac; and this was produced in the English House of Parliament in evidence of the mental capacity of the African Race, and urged as an argument for their emancipation from

slavery; the calculations in it were so thorough and exact as to excite the admiration of such men as Pitt, Fox, and Wilberforce.

An African chief, on the coast of Guinea, observing what a superiority civilization and learning gave to the Europeans over the Africans in their traffic, bargained with a Captain Swanstone, a native of Scotland, who traded on the coast, that his young son should be taken by him to his own country to be educated, and then returned. Accordingly, his father, an old man, came with his mother, and a number of sable courtiers, to a place on the side of a green eminence near the shore, and there, amidst the tears of the latter parent, he was formally consigned to the care of the British trader, who pledged himself to bring back his tender charge, some years afterwards, endowed with as much learning as he might be found capable of receiving. On shipboard he was named Thomas Jenkins. Unfortunately this captain died very shortly after landing in Scotland, and the poor black boy was left without a friend, and utterly destitute of everything. After various hardships, he was taken in by a compassionate farmer. Discovering his taste and aptitude for learning, this new friend sent him to an evening school, at which he made such progress as excited the astonishment of the neighborhood. While daily occupied with the drudgery of a farm servant, he began to *instruct himself in Latin and Greek*, and ere long also acquired considerable acquaintance with mathematics. His mind was deeply impressed with the truths of the Christian faith, and he became a regular and

devout attendant of public worship and of all religious ordinances. He was universally regarded as a person of estimable character. When he was about twenty years of age, a vacancy occurred in the school of Teviot-Head; a committee of the Presbytery of Jedburgh set a day on which they would meet and examine candidates for the situation. Among the competitors appeared Black Thomas, with his books under his arm. The committee was surprised, but could not refuse to read his testimonials and admit him to the examination like the rest. More than this, his scholarship was so decidedly superior to the others, that they could not avoid reporting him as the best fitted for the situation. Thomas retired in triumph from the field; but his prospect was soon clouded. On the report coming before the Presbytery, a majority of the members were alarmed at the strange idea of placing a Negro, a born pagan, in such a situation; and poor Tom was accordingly voted out of all the benefits of the competition. The poor fellow suffered dreadfully from this sentence, which made him feel keenly the misfortune of his skin, and the awkwardness of his situation in the world. But, fortunately, there were those interested in the matter who felt as indignant at the treatment as he felt depressed under it. The heritors, among whom the late Duke of Buccleuch was the chief, took up the case so warmly, that it was immediately resolved to set up Tom in opposition to the teacher appointed by the Presbytery, and to give him an equal salary. A room was hastily fitted up for the purpose, and Tom was at once installed

in office. The result was, that after a short time the other school was completely deserted; and the black pagan boy, who had come to Scotland to learn, soon found himself fully engaged in teaching the sons and daughters of Christians, and in the receipt of an income more than adequate to his wants. To the gratification of his friends, and to the no small confusion of the Presbytery, he proved an excellent teacher, and became as much beloved by his pupils as he was respected by those who employed him.

We add one more example. In the year 1761, Mrs. John Wheatley, of Boston, New England, went to the slave market, to select from a crowd of unfortunates there offered for sale, a Negro girl, whom she might train, by gentle usage, to serve as an affectionate attendant during her old age. Amongst a group of more robust and healthy children this lady observed one, slenderly formed, and suffering apparently from change of climate and the miseries of the voyage. The interesting countenance and humble modesty of the poor little stranger induced Mrs. Wheatley to overlook the disadvantage of a weak state of health, and Phillis, as the young slave was subsequently named, was purchased in preference to her healthier companions, and taken home to the abode of her mistress. The child was in a state of almost perfect nakedness, her only covering being a strip of dirty carpet. These things were soon remedied by the attention of the kind lady into whose hands the little African had been thrown, and in a short time the effects of comfortable clothing and food were visible in

her returning health. Phillis, at the time of her purchase, was some seven or eight years old, and the intention of Mrs. Wheatley was to train her up for a common servant. But the marks of extraordinary intelligence which Phillis soon evinced, induced her mistress' daughter to teach her to read; and such was the rapidity with which this was effected, that, in sixteen months from the time of her arrival in the family, the Negro child had so mastered the English language, to which of course she was an utter stranger before, as to read with ease the most difficult parts of Sacred Writ. This uncommon docility altered the intentions of the family regarding Phillis, and in future she was kept constantly about the person of her mistress, whose affections she entirely won by her amiable disposition and propriety of demeanor.

At this period, but little attention was bestowed on the education of the laboring classes even of the whites, and much less of the slave population. Hence, when little Phillis, to her acquirements in reading, added, by her own exertions and industry, the power of writing, she became an object of very general attention.

Of her infancy, spent in that unhappy land, whence she had been stolen, Phillis retained but one solitary recollection, but that is an interesting one. She remembered that, every morning, *her mother poured out water before the rising sun*—a religious rite, doubtless, of the district from which the child was carried away. Thus every morning, when the day broke over the land and the home which fate had bestowed on her, was Phillis

reminded of the tender mother who had watched over her infancy, but had been unable to protect from the merciless slavers.

As Phillis grew up to womanhood, her progress and attainments did not belie the promise of her earlier years. She attracted the notice of the literary characters of the day and the place, who supplied her with books, and encouraged by their approbation the ripening of her intellectual powers. This was greatly assisted by the kind conduct of her mistress, who treated her in every respect like a child of the family—admitted her to her own table—and introduced her as an equal into the best society of Boston. Notwithstanding these honors, Phillis never for a moment departed from the humble and unassuming deportment which distinguished her when she stood, a little trembling alien, to be sold, like a beast of the field, in the slave-market. Never did she presume upon the indulgence of those benevolent friends who regarded only her worth and her genius, and overlooked in her favor all the disadvantages of caste and of color.

Such was the modest and amiable disposition of Phillis Wheatley: her literary talents and acquirements accorded well with the intrinsic worth of her character. At the early age of fourteen, she appears first to have attempted literary composition; and between this period and the age of nineteen, the whole of her poems, which were given to the world, seem to have been written. Her favorite poet was Pope, and her favorite work the translation of the *Iliad*. Many of her pieces were written to commemorate the deaths of friends who had

been kind to her. The following little piece is on the death of a young gentleman of great promise :

“ Who taught thee conflict with the powers of night,
To vanquish Satan in the fields of fight ?
Who strung thy feeble arms with might unknown ?
How great thy conquest, and how bright thy crown !
War with each principedom, throne, and power is o'er ;
The scene is ended, to return no more.
Oh, could my muse thy seat on high behold,
How decked with laurel, and enriched with gold !
Oh, could she hear what praise thy harp employs,
How sweet thine anthems, how divine thy joys,
What heavenly grandeur should exalt her strain !
What holy raptures in her numbers reign !
To soothe the troubles of the mind to peace,
To still the tumult of life's tossing seas,
To ease the anguish of the parent's heart,
What shall my sympathizing verse impart ?
Where is the balm to heal so deep a wound ?
Where shall a sovereign remedy be found ?
Look, gracious Spirit ! from thy heavenly bower
And thy full joys into their bosoms pour :
The raging tempests of their griefs control,
And spread the dawn of glory through the soul,
To eye the path the saint departed trod,
And trace him to the bosom of his God.”

Phillis Wheatley felt a deep interest in everything affecting the liberty of her fellow-creatures, of whatever condition, race, or color. She expresses herself with much feeling in an address to the Earl of Dartmouth, Secretary of State for North America, on the occasion of some relaxation of the system of haughty severity which the home Government then pursued towards the colonies, and which ultimately caused their separation and independence.

"Should you, my Lord, while you peruse my song,
Wonder from whence my love of freedom sprung;
Whence flow those wishes for the common good,
By feeling hearts best understood—
I, young in life, by seeming cruel fate,
Was snatched from Afric's fancied happy seat.
What pangs excruciating must molest,
What sorrows labor in my parents' breast!
Steeled was that soul, and by no misery moved,
That from a father seized his babe beloved;
Such, such my case. And can I then but pray
Others may never feel tyrannic sway?"

The constitution of Phillis was naturally delicate, and her health always wavering and uncertain. At the age of nineteen, her condition became such as to alarm her friends. A sea-voyage was recommended by the physicians, and it was arranged that Phillis should take a voyage to England, and which she did. She was there received and admired in the first circles of English society; and it was there that her poems were given to the world. And here, we have no hesitation in pronouncing the foregoing lines, written by this African slave girl at the age of sixteen, as being fully equal to a large proportion of pieces that appear in standard collections of English poetry, while in harmony, and depth of thought, they are far superior to many verses put forth under great names.

"Of the skill of Negroes as carpenters and watch-makers, of their taste in drawing, of their musical talents, of their capacity in physical and mathematical science, many proofs might be given from the writings of those who have had opportunities of personal observa-

tion. Blumenbach has declared that entire provinces of Europe might be named in which it would be most difficult to find in correspondents of the French Academy such good writers, poets and philosophers as some of them."

The foregoing examples are sufficient to convince us, that among the many millions to whom no similar opportunities have ever been granted, many might be found fitted by the endowments of nature, and wanting only the advantages of education, to make them ornaments, not only to their own race, but to humanity. And yet these are the beings whom it is the fashion with certain classes of writers to represent as little better than improved apes, and as having no sufficient claim to the brotherhood of humanity! We most heartily wish that all the members of the race, to which these very writers belong, manifested an equal degree of improvability with many of these despised people. And we crave permission to ask these authorities, what better or clearer claims to true humanity can they themselves produce than those offered by the *mathematics* of Richard Banneker, by the *classics* of Thomas Jenkins, by the *poetry* of Phillis Wheatley, and by the *intelligence*, *heroism* and *piety* exhibited by a hundred others that might be named?

Of the fact, then, that all the Races of Man are endowed with the same Intellectual faculties and the same Moral sensibilities there can be no doubt whatever.

5. *The Languages of the various races of Man are held to be traceable to One original tongue.*

Language is very variable; in fact, all languages are in a state of perpetual change. No language now spoken in Europe is a thousand years old. The English of the nineteenth century could not understand and converse with the English of the tenth century—so great has been the transformation by abbreviation, new modes of pronunciation, new spelling, and other innovations. Hence the multiplication of languages and dialects, in the course of long periods of time.

The number of languages spoken by the living population of the globe is very great—not less, probably than one thousand*—and these in their structure and sounds differ from one another as do the complexions and habits of those who speak them. But the vast labor and patient investigation of learned men, during the last fifty years, go to show that, as in a wide-spreading tree, the little twigs followed down meet in branches, and the branches again a little lower in the larger boughs, and the boughs finally in one trunk—so all the tongues of living men may be traced back till they meet in a few large branches, and these branches till they unite in one original language. All the languages of the Old Continent, that is, of Europe, Asia and Africa, are believed to be traceable to *five* great branches, or families, and which are the following:

(1.) *The Japetic Family of Languages*, or as they are sometimes called, the Indo-European Family. These are spoken from the East Indies northwestward

* Adelung makes the number 3064; Balbi 800 languages, and 5000 dialects; Max Müller 900.

through Asia and across the whole of Europe to the Atlantic.

(2.) *The Semitic Family.* This includes the Hebrew, Arabic, Aramic, and Ethiopic languages.

(3.) *The Turanian Family.* These are spoken over the vast countries of Central and Northern Asia, and extend to the polar regions of Europe and America.

(4.) *The Chinese and Indo-Chinese Family.* These are the monosyllabic and uninflected languages.

(5.) *The African Family,* spoken by the nations of Africa who inhabit the countries within a few degrees to the north of the equator, and all south of that line.

More recently, the greatest of living philologists have reached the conclusion that all languages may be classified into *three* families—the Aryan, the Semitic, and the Turanian.

“Languages compared together and considered as objects of the natural history of the mind, and when separated into families according to the analogies existing in their internal structure,” says Humboldt, “have become a rich source of historical knowledge; and this is probably one of the most brilliant results of modern study in the last sixty or seventy years. From the very fact of their being the products of the intellectual force of mankind, they lead us, by means of the elements of their organism, into an obscure distance, unreached by traditionary records. The comparative study of languages shows us that races now separated by vast tracts of land are allied together, and have migrated from one common primitive seat; it indicates the course and direc-

tion of all migrations, and, in tracing the leading epochs of development, recognizes, by means of the more or less changed structure of the language, in the permanence of certain forms, or in the more or less advanced destruction of the formative system, *which* race has retained most nearly the language common to all who had emigrated from the general seat of origin."*

The relation or affinity of the languages thus classified into one distinct family is traced and decided, not by the similarity of single words or of a few names, but by what is a far safer and more certain test, namely, the fundamental structure of these languages. By the great scholars of the present day, who have devoted themselves to this study, all accidental or merely ideal analogies, such as single words and names often prove, are left aside, and the *original texture*, the *warp and woof* of language, only, being taken as proof of the relation and common descent of different tongues.

"The inference is fully warranted by what has been ascertained," says Dr. Fraser, "that nothing valuable has been added to the *substance* of languages, that its changes have been those of form only, and that no new root or radical has been invented by later generations. The Teutonic languages of Europe are illustrated by the language of Persia; the Latin of Italy connects itself with Russian idioms; and Greek with the Sanscrit of India. From Ceylon, with its fragrant breezes, to Iceland, with its wintry storms, there is, irrespective of

* *Cosmos*, Vol. II., p. 471.

form, of color, of social life, and religious institutions, but one belt of language. The American tribes of the far West, Humboldt has assured us, are indissolubly united to the inhabitants of Asia; the languages of Shem, Ham and Japheth have a common affinity; hills, plains, climates change, but language in its *substantial elements* is really more enduring than the pyramids of Egypt, the ruins of Palmyra, or the statues of Greece." *

To illustrate briefly the method pursued by linguists, we may refer to the statements of Max Müller respecting the Japetic Family of languages. If we knew nothing, he observes, of the existence of *Latin*—if all historical documents previous to the fifteenth century had been lost,—if tradition even was silent as to the former existence of a Roman empire,—a mere comparison of the Italian, Spanish, Portuguese, French, Wallachian, and Rhætian dialects would enable us to say that, at some time, there must have been a language from which these six modern dialects derive their origin in common. Without this supposition it would be impossible to account for their structure and composition,—as, for example, for the forms of the auxiliary verb *to be*, all, evidently, varieties of one common type; while it is equally clear that no one of the six affords the original form from which the others could have been borrowed. So also in none of the six languages do we find the elements of which these verbal and other forms could have been composed; they must have been handed down

* *Blending Lights*, p. 132.

as relics from a former period, they must have existed in some antecedent language, which we know to have been the Latin.

In like manner this great linguist goes on to show that Latin itself, as well as Greek, Sanscrit, Zend, Lithuanian, Old Slavonic, Gothic, and Armenian are also eight varieties of one common and more ancient type, and no one of them could have been the original from which the others were borrowed. They have all such an amount of mutual resemblance as to point to a more ancient language, the Aryan or Japetic. The people who spoke this unknown parent speech, of which so many other ancient tongues were offshoots, must have migrated at a remote era to widely-separated regions of the Old World, such as Northern Asia, Europe, and India south of the Himalaya.*

It is now agreed among all scientific philologists that the whole group of languages embraced in the Japetic family have been derived from one primitive stock, deviating from their original identity by variations at first merely dialectic, but gradually increased. "There is internal evidence," says Dr. Prichard, "in these languages themselves sufficient to prove that they grew by gradual dialectic development out of one common matrix. Any person who considers, with competent knowledge of these languages, the nature of their relations to each other, the fact that their original roots are for the most part common, and that in the great system

* *Oxford Essays*, 1856.

of grammatical inflection pervading these languages there is nothing else than the varied development of common principles, must be convinced that the differences between them are but the result of the gradual deviation of one common language into a multitude of diverging dialects; and the ultimate conclusion that is forced upon us is, that the Indo-European nations are the descendants of one original people, and consequently, that the varieties of complexion, form, stature, and other physical qualities which exist among them, are the results of deviation from an original type.*

A similar course of investigation and comparison, leading to a similar conclusion, has been pursued in regard to the remaining four great families of languages.

Again: These five primitive stocks, the Japetic, the Semitic, the Turanian, the Chinese, and the African, are found to exhibit mutual affinities,—the formative words and inflections which pervade their whole structure, and are interwoven with their very genius, indicate their derivation from one common origin. "All the nations," says Chev. Bunsen, "which, from the dawn of history to our days, have been the leaders of civilization in Asia, Europe, and Africa, must consequently have had one beginning. This is the chief lesson which the knowledge of the Egyptian language teaches us."† Thus Egyptian researches have greatly and unexpectedly contributed to establish the doctrine of the common origin of all the languages of the globe; and to strengthen,

* *Report on Ethnology*, p. 244.

† *Report*, p. 294.

therefore, the doctrine of the original unity of mankind.

"All languages in the world," says Klaproth, "are connected with one origin: a universal affinity is completely demonstrated." Herder is equally decided in his belief that "the human race and human language go back to one source." Thus the science of language has conducted us back to remotest antiquity, to the primitive home of man, where and when "all were of one language and of one speech."

6. *Certain Tastes, Arts, and Customs are found to be common to all the Races of Mankind.* Mr. Darwin, speaking on this point, says, "He who will read carefully Mr. Tylor's and Sir J. Lubbock's interesting works, can hardly fail to be deeply impressed with the close similarity between the men of all races in tastes, dispositions and habits. This is shown by the pleasure which they all take in dancing, music, acting, painting, tattooing, and otherwise decorating themselves—in their mutual comprehension of gesture-language—and by the same expression in their features, and by the same inarticulate cries, when they are excited by various passions." *

Certain arts and implements likewise are found to be universally disseminated among the human race. The club, the spear, the bow, the flint arrow-heads, the canoe, the use of fire, shell and horn ornaments, religious rites and sacrifices, etc. All these, in one form or another, are found in every region of the globe, and have been

* *Descent of Man*, Vol. I., p. 223.

in use through every period of its history, and they thus plainly point to the one origin of our Race.

It is unnecessary to multiply these evidences any further—those that have been presented we deem amply sufficient. We have seen that the differences observed in the form of the skull, in the color of the skin, and in the quality of the hair, of the various races of men may be satisfactorily accounted for by the prolonged influence of geographical positions, of elevation above the level of the sea, of the dryness or dampness of the atmosphere, and of savage or civilized habits of life; and we have also seen that all the essential organs, members and functions of the human races are so identical that the most competent judges have failed to draw any certain dividing lines between them—that the laws of their vital functions, regulating the periods and duration of life and the whole economy of the sexes, are the same in all the varieties of mankind—that all exhibit that most decisive test known of the identity of species, namely, fertility one with another—that all possess the same intellectual faculties, the same moral sense, the same sympathies and affections—that all languages and dialects as they are traced backward converge toward one original tongue—and that certain arts, practices, arms, and implements are and have been common to the inhabitants of every region of the globe. *All this* we regard as ample and convincing proof that all nations of men are descended from one common stock, from one and the same human pair. And we must say that we cannot conceive how any person can candidly weigh this mass of evidences,

and not admit, that they constitute a demonstration of the fact as conclusive as the nature of the subject will admit, or that reason could demand.

Evidences such as the above have served to convince and satisfy the ablest naturalists of our day that the origin of mankind is one. *Professor Huxley* says, "I am one of those who believe that, at present, there is no evidence whatever for saying, that mankind sprang originally from any more than a single pair; I must say, that I cannot see any good ground whatever, or even any tenable sort of evidence, for believing that there is more than one species of man."* Equally decisive and emphatic is the testimony of *Alexander von Humboldt*—"The different races of men are forms of one sole species; they are not different species of a genus."† And *Mr. C. Darwin* states that "he has no doubt that all the races of Man are descended from a single primitive stock."‡ To the foregoing we might add the names of *Sir Charles Lyell*, *Prichard*, *Smith*, *Bulbi*, *Adelung*, *Rougemont*, and *Bachman*. In short, this is the prevailing opinion among ethnologists at the present day.

The doctrine of the unity of mankind, then, which is the doctrine of the Bible, after all the various and repeated assaults of its enemies, may be considered as finally settled on the ground of simple scientific investigation. And thus, as in a hundred other instances, the testimony of science comes at length to confirm that of the Inspired Word.

* *Origin of Species*, p. 113.

† *Cosmos*.

‡ *Descent of Man*, Vol. I., p. 220.

The common origin of the human races has been by no means an apparent fact to men; indeed, the doctrine has been one involved in great obscurity, while many things seemed to speak directly against it. The varieties of languages, of complexions, of forms of skull, of expressions of features, and of qualities of hair, all would appear to favor strongly the idea that these races must have descended from different and distinct original stocks; and it must be admitted that the national prejudices of the *Jews*, who accounted all Gentile nations as dogs and outcasts, would naturally and powerfully incline them to this latter view. Yet we find the sacred writers, without doubt or hesitation, laying the doctrine of the unity of mankind at the foundation of their holy Book and Religion; and plainly and emphatically declare that all the races are the offspring of one common father, Adam; that "God has made of one blood all nations of men to dwell on all the face of the earth"; and that there was a time when "the whole earth was of one language and of one speech." Whence came these views and thoughts into the minds of those sacred writers? How, in their unscientific day, and in their circumstances of limited knowledge of the world and its inhabitants—how on subjects so difficult, on which there has ever since been such a variety of opinions among men, did they at once anticipate all that would be established on the subject in the far distant age of the latter part of the nineteenth century of the Christian era?—how could they state *at the outset* what man after protracted scientific investigation *would* be led to believe *at the last*? The simplest

and most credible explanation that can be given of this is, that the Omniscient Spirit, that sees and knows all truth, guided them to the knowledge of the facts and to the statement of the truths, to which the world would at last come, but which would be reached by men in their own investigations only after ages had passed away.

The theory that asserts the Races to be of different and distinct origins, as is ever to be expected from a doctrine founded in error, is adverse to the best interests of mankind, and tends to aggravate the direst evils under which the world has ever groaned—*war* and *slavery*. This is its obvious and certain tendency. It dissolves all the bonds of the human family, it dissevers all fraternal relation between peoples, it extinguishes all common sympathy, it makes differing races aliens one to another, and thus fosters the spirit of strife, enmity, and bloodshed. And hence the notorious fact, that in this country, in time past, it found some of its warmest advocates among those interested in the system of human slavery.

On the other hand, the Bible doctrine of the unity of mankind, in harmony with the eternal tendency of truth, is eminently conducive to the peace and highest welfare of the world. It teaches us that the earth and its population constitutes one family; that we are all vivified by one and the same hereditary blood; and that we owe one to another the affection, sympathy, and kindness of brethren. Baron Humboldt, speaking of the important bearing of this doctrine, says, "Deeply rooted in the innermost nature of man, and enjoined upon all,"

by the highest tendencies, the recognition of *this bond of humanity* becomes one of the noblest leading principles in the history of mankind." Yes—for it supplies a foundation for the broadest philanthropy, and offers incentives to the exercise of universal benevolence. It enjoins upon us the spirit of brotherly love, and the practice of brotherly kindness, toward every human being. It bids us carry the light and the blessings we enjoy to every benighted and destitute child of Adam, whether dwelling on this or that side of the globe, whether bleached amid polar snows or blackened beneath tropic suns. It commands us to go forth into all the world, and preach the Gospel to every creature, with the assurance that whosoever believeth in the Son of God shall be saved.

NOTE.—To all that has been said above, we may add that the *Traditions* which prevail in all lands connect together the most distant and dissimilar races, and which, like the converging sunbeams, point us back to One Origin.

1. *The Creation of Man* has its place in the legends of Greece, in the beliefs of India, in the cosmogony of Peru, in the traditions of the North American Indians, and of the South Sea Islanders.

2. *The Garden of Eden* has its representation under the City of Brahma among the Hindoos, and under the Garden of the Hesperides among the Greeks.

3. *The Tree of Knowledge of good and evil* has its counterpart in the Golden Apples, the mysterious Tree, and the watchful Serpent in classic fable.

4. *The Temptation of Eve* has its record in the legend of the lovely Pandora, who, yielding to her fatal curiosity, opened the closed Box, from which flew forth diseases and wars to fill the world with woe.

5. *The Original Innocence and happiness* of the first Human Pair are embodied in the traditions of China, Thibet, Persia, Ceylon, and India.

6. *The Division of Time into Weeks* is found to have prevailed almost universally.

7. *The Serpent of Eden* has its memory preserved in the wide-spread prevalence of Serpent Worship; a practice found in Asia, Africa, Madagascar, the Friendly Islands, and various parts of America.

8. *Of the Deluge* traditions are found in China, India, Persia, Egypt, Greece, the Pacific Isles, and in North and South America.

9. *The Institution of Sacrifice* has been remembered and practised through all the ages, and among all the nations of the earth.

These and similar traditions, as Dr. Fraser observes, "constitute a cumulative argument in favor of *One Race*, which cannot be ignored or set aside. Their prevalence is utterly inexplicable, except through the Bible narrative. On its basis alone can we so adjust the facts of science, and the common traditions of dissimilar races, as to realize perfectly harmonious results."



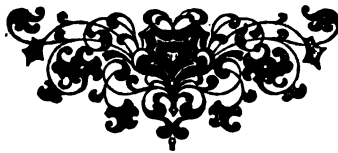
CHRONOLOGY

AND

THE ANTIQUITY OF THE HUMAN RACE.

No other history than the Hebrew History even professes to go back to the creation of man, or to give any account of the events which connect existing generations with the first Progenitor of their Race. And of that history the sole object appears to be, to give in outline the ORDER of such transactions as had a special bearing on Religious Truth, and on the course of Spiritual Belief.—DUKE OF ARGYLL.

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CHRONOLOGICAL DIFFICULTIES: 1. IN REGARD TO THE AGGREGATE POPULATION OF THE EARTH; 2. WITH REGARD TO THE EGYPTIAN MONARCHY; 3. IN CONNECTION WITH THE EARLY OCCUPATION OF CHINA; 4. RESPECTING THE EARLY DEVELOPMENT OF MANKIND INTO DISTINCT RACES; 5. IN REGARD TO THE REMOTE EXISTENCE OF DISTINCT LANGUAGES.



CHRONOLOGY

AND

THE ANTIQUITY OF THE HUMAN RACE.

HRONOLOGY is the science of computing and adjusting periods of time, or of determining the dates of past events; and is, therefore, a branch of study of great importance to the right understanding of the Scripture history of mankind, as well as of history in general.

The system of chronology commonly followed for all periods preceding the Christian era is that based on the Masoretic or Hebrew Text of the Old Testament Scriptures. This, we may notice, often differs more or less in its numbers from the Septuagint or Greek Text, while both differ from the Samaritan Text. Many of these variations have not yet been satisfactorily accounted for, while considerable light has been thrown on others of them by the laborious investigations of Hayes, Jackson, Hales, and others.

It is further to be observed, that the Scripture, in

either Text, does not offer sufficient data for an exact or complete chronology, for it does not give a complete history of the times to which it refers, but deals with special and detached periods, and only with special and marked individuals. Its chronological information, therefore, is not absolutely continuous; there are even in some of its genealogies gaps the length of which we have no means of determining with certainty. Of the Sacred History, the main object appears to be to give in outline the order of such transactions as had a special bearing on Religious Truth, and on the course of Spiritual Belief. The intimations given in the earlier chapters of the Book of Genesis on all matters of purely secular interest, are incidental only, always very brief, and often quite obscure.

In regard to many periods, concerning which no direct or explicit information is given, all our systems of chronology involve *suppositions* as to the principle of interpretation to be adopted, and also as to the import of certain words descriptive of descent, which are doubtful, and which often cannot be applied consistently throughout.

It is, therefore, to be particularly noticed, and ever borne in mind, that the chronology inserted in the margin of our Authorised English Bible is no part of the Sacred Volume, and of no binding authority on the conscience, but a chain of human computations, approximately correct for the most part, yet having some links which are but doubtful inferences, and some that are but little better than conjectures. Hence, should certain

of these dates, such for example, as that given to the Deluge, or that of the dispersion of mankind at Babel, be proved erroneous, it would not in anywise affect the credibility of the Scriptures; or, should the age which this chronology assigns to the human race be rejected as inadequate, it is not to be regarded necessarily as a rejection of the Bible. The narratives and statements of the Bible are of God, but the dates in its margin are of man, just as are its divisions into chapters and verses.

“It does not affect the respect due to the Book as an inspired volume of *fact* or *doctrine*, to consider its *general chronology* an open question. That it has been so considered and treated by some of the most pious and learned men is a fact well known to the Biblical student. When *time* is not the *essence* of a fact recorded, it is unimportant. There are few even of modern histories that harmonize in *dates*; yet no one doubts the facts they state. In this case, as in the kindred one of geological science, it would seem that the simple purpose for which the Book was written has been overlooked. The Bible was never intended to be a system of chronology, nor a treatise on Geology.”*

After the foregoing remarks, the reader will not be surprised to find that the most eminent chronologers differ in regard to the dates of not a few of the events and transactions noticed in the Scripture, according to the principle of interpretation they adopt, and the Text

* Dr. Hawk's *Monuments of Egypt*, p. 30.

on which they base their calculations. The following are the dates given in the Hebrew and Greek Texts, to the principal events of the periods with which we shall be chiefly concerned in the discussions of this chapter. The figures indicate the age of each individual when the next was born.

| BEFORE THE DELUGE. | | Sept. | Heb. | AFTER THE DELUGE. | | Sept. | Heb. |
|--------------------|------|-------|-----------------------------------|-------------------|-----|-------|------|
| Adam | 230 | 130 | Arphaxad | 135 | 55 | | |
| Seth | 205 | 105 | Cainan | 130 | 11 | | |
| Enos | 190 | 90 | Salah | 130 | 30 | | |
| Cainan | 170 | 70 | Eber | 134 | 34 | | |
| Mahalaleel | 165 | 65 | Peleg | 130 | 30 | | |
| Jared | 162 | 162 | Reu | 132 | 32 | | |
| Enoch | 165 | 65 | Serug | 130 | 30 | | |
| Methuselah | 187 | 187 | Nahor | 119 | 29 | | |
| Lamech | 188 | 182 | Terah | 70 | 70 | | |
| Noah | 502 | 502 | Abram leaves Haran.... | 75 | 75 | | |
| Shem | 100 | 100 | Abram arrives in Canaan | 1245 | 365 | | |
| | 2264 | 1658 | This was 2 years after the Flood. | | | | |

Concerning these two chronologies we may observe, that strong doubts are entertained by Biblical critics concerning the authenticity of that based on the Hebrew Text, and that, compared with the longer chronology of the Greek or Septuagint, it is of modern adoption. The primitive Christian writers unanimously received and followed the Septuagint; and so do the most esteemed chronologers of the present day. Bede, the venerable monk of Durham, who flourished in the eighth century, was the first Christian writer who manifested a preference for the Hebrew; but prior to the Reformation few shared in his views. When Luther roused the

attention of Europe to the errors of the Church of Rome, the authority of the Greek version, as in all preceding ages, regulated all calculations concerning the age of the world, and the dates of the great events of Sacred History. In the warmth of the controversy that ensued, some of the more rigid Protestants hastily pronounced the chronology of the Septuagint to be a Popish corruption, and threw their whole influence in favor of that of the Hebrew text, and in opposition to the Greek, though this had been held, with scarce a dissenting voice, by all Christians from the days of the Apostles.

When or how these variations of the figures of the two versions of the Scriptures originated is not positively known; some of them are suspected to be designed corruptions, and others the result of carelessness in transcribers. The testimony of Josephus, though a Hebrew, as a whole, is in favor of the Septuagint. The evidence of all ancient history and tradition likewise goes to confirm it. To this we may add, that the able writer of the article on "Chronology," in the last edition of *Smith's Dictionary of the Bible*, after thoroughly sifting all documents bearing on the subject, comes to this conclusion: "On the whole, therefore, we are inclined to prefer the Septuagint numbers after the Deluge, and as consistent with them, and probably of the same authority, those before the Deluge also." So far then as the Sacred Scriptures serve to supply us with a chronology, we may conclude that the figures found in the Greek version come nearest to the true dates of the events related.

Considerable as is the extension of the Septuagint Chronology beyond that of the Hebrew, certain developments made within the past few years demand, in the judgment of some, a much longer chronology even than this. The first grave doubts respecting the correctness of the commonly received dates of the creation of man, the deluge, and the dispersion of mankind, were suggested by the researches made into the histories and monumental inscriptions of the various nations of the East, particularly those of the Egyptians, Hindoos, and Chinese. Scholars found themselves unexpectedly carried back by these some thousands of years beyond what the standard chronology of Europe would allow, and could discover no satisfactory way of reconciling these widely different reckonings of time. The matter, however, for some years made but little way beyond the limited circle of these students of oriental literature. But antiquarian research, or archæology, as the pursuit is now more commonly termed, turned up from time to time other evidences of quite a different character, which seemed altogether to favor the longer chronologies of those ancient nations. In many parts of Europe, traces of man's bones, and of the works of man's hands, were found associated with the remains of various species of animals long ages since extinct, in caves, in mounds, in lakes, and sometimes buried at great depths beneath naturally formed strata of loam or gravel. Many of these relics, by their general appearance, or by the peculiarity of their construction, or by the circumstances in which they were found, are believed by many to carry

back the date of man's origin very much further than was ever imagined before.

Attempts not a few have been made by sceptics to array the above class of facts against the Sacred Volume, and by means of them to undermine all faith in its historic records. The vast antiquity held to be proved by them has been pitted against what have been termed the "comparatively modern dates" of the Bible, and the conclusion at once drawn therefrom, that it is no longer worthy of credence. A great parade of learning has frequently been made of late in this direction; arguments of various sorts, garnished with scientific technicalities, have been thrust before the public as so many conclusive proofs that the "Old Book" is doomed to be soon cast aside as a thing of the past. To all this we have here simply to repeat what has already been said in substance, that whatever may be the truth concerning the antiquity which these records and relics serve to indicate, and whatever bearing they may have on the chronology commonly attached to the Bible, they do not, and cannot, in anywise or degree, affect the inspired Record itself. Though they should entirely change the earlier dates, and substitute others in their room, the Bible would still remain intact. The blow thus aimed at this holy Book hits quite another mark—it is what the computations of men say, and not what the inspiration of God has given, that such assaults impugn. The friends of the Bible are quite as desirous to ascertain the correct dates of the great events spoken of in its early records, as are any of its enemies,

come the information from what source or quarter it may.

The genealogical tables of the Bible, being more or less incomplete, its most devoted friends have differed in their estimates of the periods which they cover. "The extreme uncertainty attending all attempts to determine the chronology of the Bible," says Dr. Hodge, "is sufficiently evinced by the fact that *one hundred and eighty* different calculations have been made by Jewish and Christian authors, of the length of the period between Adam and Christ. The longest of them make it 6984, and the shortest 3483 years. Under these circumstances, it is very clear that the friends of the Bible have no occasion for uneasiness. If the facts of science or of history should ultimately make it necessary to admit that eight or ten thousand years have elapsed since the creation of man, there is nothing in the Bible in the way of such concession. The Scriptures do not teach us how long men have existed on the earth. The tables of genealogy were intended to prove that Christ was the son of David and of the seed of Abraham, and not how many years have elapsed between the creation and the advent."*

With these necessary preliminary remarks, we now come to the question proposed to be discussed, namely, What are the actual bearings of recent developments on the antiquity of the human race? Do they in any way affect the credibility of the Bible history? Do they offer

* *Systematic Theology*, Vol. II., p. 41.

any certain or satisfactory evidence that man has been an inhabitant of the earth for a longer period than the Bible either allows or warrants us to believe?

In order to survey and understand as correctly as possible the wide and obscure field to which this inquiry leads us, it is necessary that we take up our position upon firm ground, and as near as practicable to its confines. And this we shall now attempt to do. The remotest standpoint or date, concerning which most chronologers are agreed, or at least are so nearly agreed that we may consider it as settled, is that of Abraham's arrival in the Land of Promise; this we may put down, without material error one way or the other, as having taken place in the year 2000 B. C.—this being the *mean* of the dates given for this event by Hales, Jackson, Usher, and Petarius. This period is the beginning of reliable chronology, and this date is the earliest in the history of mankind on which we can safely stand. All dates beyond are involved in much doubt.

Taking then our stand in time by the side of the "Father of the Faithful" on his arrival in the plain of Moreh, the centre of his promised inheritance, our first inquiry is, To what numbers had the family of Noah multiplied, and to what extent had they overspread the earth at that date? We have no sources of information from which we can gather a definite or direct answer to this question. The history given us of the period intervening between the Flood and the arrival of this Patriarch in Canaan is extremely brief, being all comprehended within three short chapters. The first of these

is occupied with a relation of the promises and instructions with which Noah and his family left the ark, and commenced life on the reclaimed earth; the second is taken up with the genealogies or the names of the tribes into which the descendants of his three sons divided; and the third is devoted to an account of the confusion of tongues, and a further genealogy of one branch of the family of Shem. This comprises all the information handed down to us of this period in the sacred history.

In the genealogy of this one branch of the descendants of Shem, "we have a list of names, which are names and nothing more to us. It is a genealogy which neither does, nor professes to do, more than to trace the order of succession among a few families only out of the millions then already existing in the world. Nothing but this order of succession is given, nor is it at all certain that this order is consecutive or complete. Nothing is told us of all that lay behind that curtain of thick darkness, in front of which these names are made to pass. And yet there are, as it were, momentary liftings, through which we have glimpses of great movements which were going on, and had long been going on, beyond. No shapes are distinctly seen. Even the direction of those movements can be only guessed. But voices are heard, which are as the voices of many nations."*

In the narrative of Abraham's call out of Haran, and of his subsequent movements in the Promised Land, we find several statements and numerous incidental allu-

* *Primetal Man*, p. 81.

sions, that plainly reveal the fact that in his day the human family had greatly multiplied and spread far and wide over the face of the earth. The land of his nativity appears to have been situated in the midst of an extended region of vast population, and comprehending the territories of many independent kings;—here lay the dominions of Amraphel king of Shinar, Arioch king of Ellazar, Chedorlaomer king of Elam, Tidal, king of nations, and other kings probably more or less remote whose names are not mentioned. And scattered through these kingdoms were already many cities, among which we read the names of Ur, Babel, Erech, Accad, Calneh, Nineveh, etc. What the actual extent of these kingdoms, or magnitude of these cities might have been, we have no means of ascertaining; but all these facts certainly indicate that this whole central region of Western Asia was quite thickly peopled, and that some at least of the above kingdoms were no mean powers; such, we read, were the national strength and military resources of Chedorlaomer with his allies that he was able to carry on wars of conquest at the distance of many hundreds of miles from the seat of his government.*

As Abraham, in obedience to the Divine Call, journeyed southwestward toward the Land of Promise, at the distance of some 300 miles from his native Haran he passed by Damascus, already a place of note, and the centre of a busy population extending far on every side. And when he had advanced some 150 miles farther and

* See *Genesis* xiv. 1-12.

arrived in Canaan, he found it no empty or desert country, but peopled by various tribes throughout its length and breadth. Along the Mediterranean coast, even from Sidon to Gaza, stretched the flocks and herds of the Canaanites. Farther south still along the same coast was the dominion of Abimelec king of Gerar, whom Phicol served as the chief captain of his host. Inland and adjoining these extended the territory of Melchizedec king of Salem. East and southeast of the latter stretched the plains of Jordan and the region of the Salt Sea, studded with the cities of Sodom, Gomorrah, Admah, Zoar and Zeboim; while far beyond lay the territory of Moab in one direction, and Mount Seir in another, peopled by tribes, whose accumulated wealth even then was sufficient temptation to draw upon them the invasion of distant kings. Thus the land of Canaan on Abraham's entrance into it wore everywhere the aspect of a long-settled and populous country.

After a brief sojourn, Abraham was compelled by famine to leave this region, and seek sustenance for himself and household in the land of Egypt, a country some 250 miles still farther from his native home. In Egypt he found a great and strong nation, advanced in civilization and the arts, and living under a well-organized government, whose great cities with their palaces and temples plainly indicated that they had for many generations been dwellers in the land.

So far, in this direction, but how much farther we cannot tell, had the descendants of Noah already travelled and spread. And we have clear intimations in the

tenth chapter of Genesis that they had in like manner advanced and spread in all other directions—the descendants of Japheth northward and westward toward Europe, and the “Isles of the Gentiles;” and those of Shem eastward and southward through Asia. Thus we gather, brief as the sacred history is, that in the day of Abraham, the human family had greatly multiplied, and overspread a very large portion of the habitable surface of the earth. And all this receives confirmation from the records and traditions of various nations.

Now these vast numbers and this wide dispersion of the world's population at this early day, it is contended, present various difficulties which are irreconcilable with the Scripture history of our race, and are, therefore, fatal to its credibility. These difficulties we now propose to consider in their order.

1. *Difficulty in regard to the aggregate of the world's population.* It is asserted that we have in the immense population of the globe at this date a proof conclusive of the incorrectness of the Bible history of mankind;—that it would require a vastly longer period than that allowed by the Bible between the Flood and the Call of Abraham, for the single family of Noah to increase into such multitudes as had already taken possession of Asia, Europe and Africa. Hence, a much higher antiquity is claimed for the human race than the Bible is understood to allow.

We admit that the length of time indicated by the common or Hebrew chronology, 428 years, is much too short for this great increase of the human family; but

we contend, and shall now undertake to prove, that the chronology based upon the Greek Text, which, for the reasons already given, we hold to be the more correct chronology of the Bible, allows an amply sufficient period, 1247 years, to account for all that we find in the world in the day of Abraham.

Let us resort to figures, for the increase of human population has been reduced to a science. According to the high authority of Malthus, it is a proved fact that population tends to increase at the rate of doubling every twenty-five years. That this rate of increase, excluding extraordinary destructions of life by war and pestilence and famine, is a fair estimate, might readily be shown from the statistics of various nations; but perhaps no fact more satisfactory, or more in point, could be cited than that supplied by the interesting and romantic history of Pitcairn's Island, which was peopled by a remnant of the mutineers on the English ship *Bounty*, together with a few islanders that accompanied them. There landed on this lone and desolate isle, in the year 1790, nine Englishmen, each with an Otaheitian wife; six Otaheitian men, three of them having wives; and one child ten months old:—in all, 28 souls. Though eleven of the men were cut off by mutual violence within the first year, yet the remainder, by the year 1830, had increased to 79 souls; by the year 1856 to 194 souls; and by 1862 to 296 souls. That is, in seventy-two years they amounted to more than tenfold the number that landed on the island, thus doubling in considerably less than every twenty-five years. If,

therefore, the populations of the crowded countries of Europe, as Malthus states, and if this little company on a desolate island, only four miles and a half in circumference, present such an increase, it is obvious that this rate, namely, *doubling every twenty-five years*, is a fair and safe basis for calculating the increase of Noah's descendants, who had all the world to themselves, and who, moreover, were favored with a measure of longevity far beyond what men attain in our day. From the deluge to Peleg, the period of *procreation* ordinarily ranged from one hundred to one hundred and fifty years.

Now the problem before us is, allowing the family of Noah, eight souls, to increase at the rate of doubling every quarter of a century, what would be the earth's population at the end of 1247 years, or the time when Abraham entered Canaan? On calculation we find that it would stand as follows:

| | | |
|-----------------------------------|-------------------------|----------------------------|
| There would be in the world | 128 souls at the end of | 100 years. |
| " | " | 2,048 " 200 " |
| " | " | 32,768 " 300 " |
| " | " | 524,288 " 400 " |
| " | " | 8,388,608 " 500 " |
| " | " | 134,217,728 " 600 " |
| " | " | 2,147,483,648 " 700 " |
| " | " | 34,359,738,368 " 800 " |
| " | " | 549,755,813,888 " 900 " |
| " | " | 8,796,093,022,208 " 1000 " |

But we need not carry out this calculation any further;—the above figures are sufficient to show the rapid and enormous multiplication of men that would have taken place at the rate of doubling every twenty-five years. If now, in order to make full allowance for the destruction

of life by the ravages of war, pestilence and famine, we say, that from the end of the fifth century after the Deluge, the population increased only at the rate of doubling once in fifty years;* we should still have in the world, in the days of Abraham, a population far outnumbering what that of the whole globe is estimated to be at the present day.—There is, then, in the aggregate population of the world at the time under consideration, no ground whatever for argument or objection against the Bible history of our Race.

2. *Difficulty with regard to the antiquity of the Egyptian Monarchy, as indicated by its civilization, and recorded upon its monuments.* Those who urge objection on this ground tell us that Egypt was an ancient kingdom when Abraham first arrived there; that it had already been under the government of successive dynasties, embracing altogether a long list of kings, whose united reigns according to the hieroglyphic records amount to several thousands of years. And they further argue, that when the first of these monarchs assumed his regal power and position there must have been there a very considerable population to constitute anything like a kingdom; and that this population again must have occupied many generations to increase to such numbers; and, finally, that behind all this there must have elapsed a long time before the first settlers could have reached a land so distant from the cradle of mankind. And thus

* England, with all her wars, has, within the past fifty years, more than doubled her population, beside sending upward of five millions away as emigrants to other countries.

it is contended that the history of the Egyptian nation carries us back far beyond the date which Scripture assigns to the Deluge. Hence, again, has been seized with avidity the conclusion that the Bible history of the human race cannot be true.

In regard to the correctness of dates and periods derived from Egyptian hieroglyphics, especially those embraced within its earlier history, there exists, as is well known, very great uncertainty. This is evident from the fact that the lengths of these periods according to one decipherer are twice, and even thrice, as great as the same periods are read by another decipherer. And not only this, but the same interpreter sometimes differs widely from himself; thus Bunsen, in his latest recension of Egyptian chronology, speaks of having "got rid legitimately of a considerable number of useless centuries." Differences so enormous in the reading of the same records cast complete doubt on the whole system of their interpretation. Add to all this, that it remains quite undetermined yet, whether many of those whose names are found in the lists of Egyptian kings were *associate* sovereigns of the same province, or *contemporary* Rulers of different provinces, or *successors* of one another over two or more kingdoms; it is obvious, therefore, that any attempt to determine dates and periods from the reigns of these must be largely conjectural. Moreover, it is even uncertain whether Menes, the first of Egypt's mortal kings, whose reign is taken as the starting-point of all definite periods, was a real or a *mythical* personage: "The entire uncertainty of all that precedes Menes,"

says Kenrick, "may even throw doubt on his own historic reality; for we do not commonly find the darkness of a mythic period succeeded at once by light and certainty;" and the same writer intimates that his very name may be "fictitious."*

Safe and reliable computations do not carry the foundation of the Egyptian monarchy further back than 700 years before the visit of the Hebrew Patriarch. "Seven centuries before Abraham," says the Duke of Argyll, "is the estimate of Mr. Stuart Poole, of the British Museum, who is one of the very highest authorities, and certainly the most cautious, upon questions of Egyptian chronology." Admitting the reality of this monarch, and accepting this estimate, we have the reign of Menes beginning 2700 years before Christ, and 547 years after the Deluge. With these data, let us now inquire how we shall come out in regard to the population and civilization of Egypt.

Egypt, as formed by Nature, was a country that offered many advantages and attractions. The climate was salubrious. Its Delta and Valley, for an extent of six hundred miles, watered and enriched by the Nile with its many branches, possessed a soil of unsurpassed fertility. In no country in the world could subsistence be obtained more easily. It was, therefore, likely to be peopled at a very early day. Let us now suppose (and none can question the reasonableness of the supposition), that at the end of two hundred years from the Deluge,

* *Ancient Egypt under the Pharaohs*, Vol. II., pp. 95, 96.

a little company of *eight nomads* with their flocks reached in their migrations the waters of the Nile, and fixed their habitation on its warm and luxuriant banks; and that a similar company followed them and settled there at the end of every quarter of a century; and that all these companies, from the respective dates of their arrival, went on increasing at the rate of doubling every twenty-five years. We should then have at the end of 350 years, that is, at the commencement of the reign of Menes, a population of more than 260,000,—a very respectable foundation certainly for a kingdom in that early day of the world.

If, now, from the accession of Menes, in order to make ample deduction for extraordinary waste of life by tyranny, plagues and wars, we reduce the rate of increase to doubling only once in *seventy-five years*; then at the end of seven centuries, that is, at the date of Abraham's visit, we should have a population of 133,000,000. And if we reduce this number again by one-half, to allow for those who might have wandered away to the West and to the South, agreeably to the statement of Strabo, to people the vast continent of Africa, there would still remain in Egypt over 60,000,000 of inhabitants,—a population, surely, abundantly sufficient to account for all the wealth and power, cities and temples, and whatever else the Patriarch might have found there.

But aside from the population, it is urged that the advanced state of *Civilization and the Arts* at this period, in Egypt, was such as would have required a much longer period to attain than what the Bible History

allows. This objection is based on the assumption that the population of Egypt had their origin in a state of utter barbarism and ignorance—that they began at zero, and had to creep up to their knowledge of the arts, of science and government, by the slow and gradual progress of indigenous experience, discovery and invention, a process naturally and necessarily so slow, we are told, that it would have required a long series of ages to reach the elevation at which they stood at this period.

Now, all this is a mere supposition, a mere conjecture of the advocates of the theory of development. No facts, no evidence whatsoever, can be offered in proof of the hypothesis that Man's primitive condition was that of barbarism, and none certainly that the original settlers of Egypt were barbarians. It is plain from the Scripture history that even before the Flood, the mechanical arts were in a good state of forwardness; as early as the days of Lamech we read of artificers in brass and iron, and of the invention of musical instruments and the building of cities. And certainly a vessel of such stately dimensions as the Ark, with its upper and lower decks, and its manifold interior divisions and conveniences, required no ordinary mechanical skill for its construction. And of this immense structure Noah was the master-builder, and his three sons probably his chief assistants. Now Noah survived the Deluge three centuries and a half, and his son Shem over five centuries. Hence the knowledge acquired of the arts and other matters, before the Deluge, must have been transmitted through these and the other survivors to their descend-

ants. The population of the world after the Deluge, therefore, must have started in the possession of a large amount, at least, of the knowledge and arts acquired before that event; they were no rude and ignorant barbarians; accordingly we read soon after of their building of great cities, and of the Tower of Babel. And from among these immediate descendants of Noah went forth those who first settled in Egypt, carrying with them, no doubt, much valuable knowledge and experience; so that the original occupants of that country might have commenced life there under mental and material conditions, in the possession of knowledge and resources, favorable to rapid advancement in art, science, and government. Add to all this, that a fine climate, and the richness of the soil yielding them abundance of all kinds of food with the least possible amount of labor, allowed them plentiful leisure for study and the cultivation of art and science. Here, then, were a people enjoying all necessary and all desirable advantages for rapid progress; and, after the lapse of a *thousand years*, when Abraham sojourned among them, we might reasonably expect that that progress would be very considerable—fully equal to all that can be proved to have existed there in his time. In evidence of this, we may refer the reader to the progress made by the Greeks in the thousand years immediately preceding the Christian era; to the surprising growth and grandeur attained by the Romans within a thousand years from the founding of their city; and to the advancement in numbers, wealth, and power, of the enslaved Hebrews, in the shorter

period that intervened between the Exodus and the close of the magnificent reign of Solomon.

It may here be observed, that, in support of the above objection, to many of the remains of ancient Egyptian art the most extravagant antiquity has been ascribed by certain archaeologists. These, however, of late, have been sufficiently refuted. "When Champollion, in the course of his researches into the *Royal Rings*, came to read upon the Zodiac of Dendera, he found the title of *Augustus Cæsar*; while on that of Esneh, he read the name of *Antonius*. That temple, therefore, which M. Dupuis had declared to be 4000 years older than the Christian era, proved to have been built about the time of its commencement; and the edifice of Esneh, which had been profoundly demonstrated to be 17,000 years old when the Saviour came, was shown to belong to a period 140 years after His advent. And thus were exposed the pretence of learning and the insolence of arrogance on the part of a class of men who sought, by bold perversion and confident dogmatism, to distort all that Egypt might reveal, into testimony against the Bible."* Referring to this class of writers, Sir G. C. Lewis makes the following severe but just observation: "Egyptology has a historical method of its own. It recognizes none of the ordinary rules of evidence; the extent of its demands upon our credulity is almost unbounded. Even the writers on ancient Italian ethnology are modest and tame in their hypotheses, compared with

* Hawk's *Egypt and its Monuments*, p. 49.

the Egyptologists. Under their potent logic all identity disappears; everything is subject to become anything but itself. Successive dynasties become contemporary dynasties; one king becomes another king, or several other kings, or a fraction of another king; one name becomes another name; one number becomes another number; one place becomes another place." *

Much has been said to the same purpose, by this set of writers, about the antiquity of the Great Pyramid, but with how little foundation will appear from the statements of the following authorities. Not only the age, but even the name of the builder of this stupendous pile is a matter of doubt. Herodotus says that Cheops erected it; Diodorus that Chembes was its builder; and Pliny, after quoting the names of twelve authors who had written on the Pyramids, declares that the builders of them are unknown.

Sir John Herschel and Professor Piazzzi Smith have attempted to determine astronomically the age of the oldest Pyramid, and their calculations placed its erection between 2171 and 2123 B. C. But as the data upon which that calculation was based were uncertain, the conclusion of course must be equally so. Sir Charles Lyell, speaking of "the temples, obelisks, cities, tombs, and pyramids of Egypt," says, "the exact date of these, after they have been studied with so much patience and sagacity for centuries, remains uncertain and obscure." And Sir George Cornwall Lewis, in a recent work,

* *Historical Survey of the Astronomy of the Ancients*, p. 368.

makes this statement: "Taking into consideration all the evidence respecting the buildings and great works of Egypt extant in the time of Herodotus, we may come to the conclusion that there is no sufficient ground for placing them at a date anterior to the building of the temple of Solomon, or B. c. 1012."*—Against the Holy Scriptures, then, no valid objection can be drawn from either the early settlement and civilization of Egypt, or from any of her stupendous works of art which still remain to be reckoned among the wonders of the world.

3. *Difficulty presented in the early occupation of China.* The people and civilization of China are said to be almost as ancient as those of Egypt. Their history and traditions together carry back their origin to very remote antiquity. The main difficulty, as regards the Bible, in connection with this people, is the great distance at which they appear at so early a day, namely, on the eastern borders of Asia, in a region separated by vast mountain ranges and the distance of thousands of miles from the country in which Noah and his family are supposed to have settled after the Flood. The date assigned by Scripture chronology to the Deluge is held to forbid the idea that it was possible for Noah's descendants to wander so far, and in such numbers, as to constitute a kingdom there at the early date claimed by Chinese history.

Asiatic nations in general are prone to exaggerate their antiquity; and in this, the Chinese are no excep-

* *Historical Survey of the Astronomy of the Ancients*, p. 440.

tion. This people, like the Hindoos, have their mythological history, which deals in large chronological intervals, and runs back indefinitely into the dim obscurity of the past. According to the most recent and reliable investigations of European scholars, their actual existence as a nation could not have been earlier than 2000 B. C., and perhaps not quite so early as that. Their authentic records, however, do not extend beyond eight or nine centuries before the Christian era. Supposing, then, that the Chinese kingdom was founded about 2000 years before the advent of our Saviour, the question is, Could the descendants of Noah, in the natural course of their migrations and dispersion, reach this remote country and so multiply there as to constitute anything like a kingdom by that date? We think it quite credible that they might have done so, and that without any extraordinary departure from the established habits of men in those primitive times.

The nomadic people of those early days removed perpetually from one locality to another, according as they needed or found pasture and water for their flocks, often travelling considerable distances in the course of a few months. When Jacob lived at Hebron, his sons were read advanced with their sheep and cattle from stage to stage, till they reached the vales of Shechem, a distance of more than sixty miles from home. Abraham, long before, travelled in the same manner with all that he had down to Egypt, and from Egypt back again to "the place where his tent had been at the beginning, between Bethel and Hai," a distance of 250 miles. In cases of

disagreement or war they frequently moved with considerable rapidity, and to remote localities, as did Jacob in his flight from Laban. In short, in those early ages, a large proportion of the people were in a state of perpetual migration.

“In an early stage of society the necessity of hunting acts as a principle of repulsion, causing men to spread with greatest rapidity over a country, until the whole is covered with scattered settlements. It has been calculated that eight hundred acres of hunting-ground produce only as much food as half an acre of arable land. When the game has been in a great measure exhausted, and a state of pasturage succeeds, the several hunter tribes, being already scattered, may multiply in a short time into the greatest number which the pastoral state is capable of sustaining. The necessity, says Brand, thus imposed upon the two savage states, of dispersing themselves far and wide over the country, affords a reason why, at a very early period, the worst parts of the earth may have become inhabited.”*

Now, Noah and his family, after the Flood, are generally supposed to have settled somewhere to the east of the region of Mesopotamia; the distance from this country in a direct course to the borders of China would be about 3600 miles. Now, supposing that the advancing wave of the world's ever-increasing population travelled eastward at the rate of *four miles a year*—a most moderate supposition, for it would be only a hun-

* Lyell's *Principles of Geology*, Vol. II., p. 471.

dred miles for every doubling of the population—then the foremost would have reached China in something over nine centuries, or about the year 2400 B. C. Let us say, as we did in reference to Egypt, that the first band that arrived numbered *eight souls* only, and that these were followed by a similar company at each interval of twenty-five years, and that all from the time of their arrival multiplied at the rate of doubling every quarter of a century; then, in four hundred years, or by 2000 B. C., there would have been there a population of over *one million*.—Now, this result agrees remarkably well with the claims of Chinese history. In their *Le K'hee*, it is stated, Dr. Marshman informs us, that at this period, the people were living as clans or tribes, in a very rude state, in woods and caves and holes dug in the ground; that they covered themselves with skins of beasts, and rude garments formed of the leaves of the trees, grass and reeds; and that they neither practised nor understood the art of agriculture. In a recent communication, a distinguished scholar, many years a resident in China, gives it as his opinion to the Duke of Argyll,* that “the Chinese Tribe was only beginning to grow into a kingdom about 2000 B. C., and that twelve hundred years later, the kingdom did not extend nearly so far south as the Yang-tsze River.”—There is, then, so far as the Sacred Record is concerned, no serious or insurmountable difficulty either in the origin or in the history of this remarkable people; all that is known with certainty concerning

* See *Princival Man*, p. 90—*Note*.

them may be readily harmonized with the Scripture history of the human race.

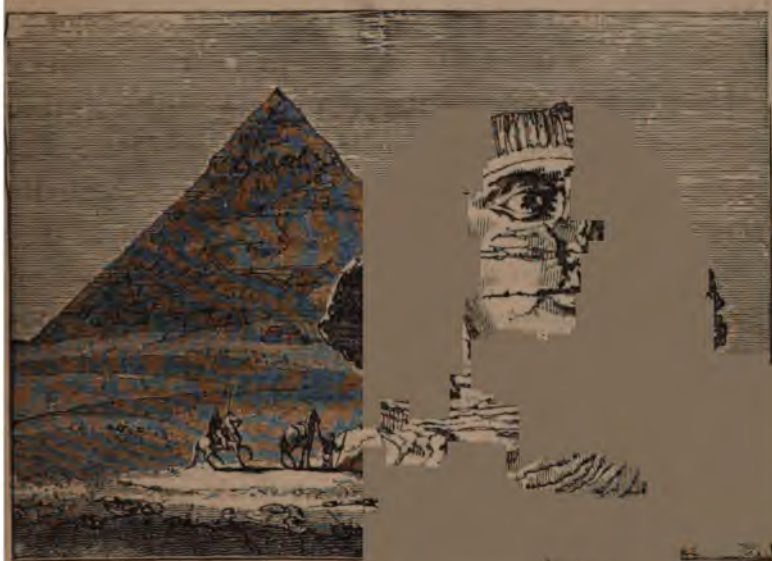
4. *Difficulty suggested by the early development of Mankind into distinct Races.* The population of the whole earth having originated in one stock or family, namely, that of Noah, the differences in form and color which distinguish them into Races must have been produced, as already shown, under the influence of various physical conditions and different social habits. This process of variation is slow; yet widely divergent features and complexions were developed in very early times. Among these stood notably the Negro type, which appears to have been established in the days of Jeremiah;—"Can the *Ethiopian* change his skin, or the leopard his spots?" was his exclamation to his incorrigible countrymen. And the pictorial records of Egypt contain representations of Negroes, with their black and peculiar features, some centuries still earlier. In the picture of Sethos I., before referred to, a Negro is depicted kneeling at his feet, who is said to exhibit all the distinctive characteristics of that Race—black face, woolly hair, flat nose, and projecting lips. All these peculiarities seemed to have been established thus early, that is about 1300 B. C.; or, according to the conclusion of Sir George Cornwall Lewis, not earlier than 1012 B. C. Now it is asserted that to produce this wide divergence between the descendants of Noah required a vastly longer period than that allowed by Scripture history, and consequently that the human family must be of vastly greater antiquity than the Bible represents.



This picture was copied from an Egyptian Temple, at Beyt-el-Welee, in Nubia, and is of the reign of
 Rameses II., son and successor of Sethos I.

That the human race exhibited very distinct varieties, and among them the Negro, at the period indicated by the above dates, there is no doubt; and there is just as little doubt that the physical differences which distinguished those varieties have often been greatly exaggerated. In these Egyptian pictures, as all must see, there is much room for error and defect on the part of the artist, and not a little allowance to be made for the defacing influence of so long a period as thirty centuries of time. Any arguments of so serious a bearing as those designed against the credibility of the Scriptures assuredly should rest on clear and certain bases. But what assurance have we of the skill or accuracy of these very ancient Egyptian artists, in the nice and difficult work of human portraiture? We are pointed to the decisive color of the figures; but we ask, was the coloring originally true to nature? was it of the right shade of blackness? Herodotus tells us that the Egyptians themselves had "curling hair and black complexions;" and Lucian adds, that they approached the Negro physiognomy in "a fulness of the lips," which may be remarked in the *Sphinx* of the Pyramids, in the heads of some of the Egyptian sovereigns, and in many representations of individuals. Was there, then, to the Egyptian artist no temptation to study effect, or to indulge in undue contrasts in his figures, giving to one a darker shade, and to another a lighter tint, in order to please or flatter his royal patrons? We often find the painters of modern times influenced by such considerations, and might not this have been the case with those Egyptian

painters? And even if the color was originally correct, what assurance have we that the lapse of three thousand years has not served to render it many shades darker than it was at first? And as to their *forms*—was there not an equal liability to error and imperfection in drawing these? What guarantee can be offered that these



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bare rough outlines found in these pictures are sufficiently accurate to be taken as a gauge or standard, by which the precise amount of variation the human face had undergone might be estimated? We well know that a slip of the pencil or of the chisel to the breadth of a hair about the eye, or the nose, or the mouth, is sufficient to change entirely the whole expression of the face. We simply intend by these remarks that

considerations such as these are not to be overlooked in estimating the true amount of variation which the Races exhibited at that early period.

To the above we may add the fact, that these pictures themselves vary one from another. There are, it is said, still earlier representations than the above of the Negro race, and which are referred to the twelfth dynasty, thus carrying back their date some five or six hundred years. In these, while the Negro color is strongly marked, it is curious to observe that the Negro features are hardly discernible; from which we may infer that to bring these out more fully, as in the picture of Sethos, required the lapse of some five or six centuries more.

Whatever of weight or force the objection based on the early development of Races may have is mainly lent to it by Ussher's short chronology—the period allowed by that between the Flood and the appearance of the Negro being regarded as too brief for the production of such a marked variety. But taking the longer and more correct chronology of Hales or Jackson based on the Septuagint version, and we have from the Deluge to the time of Sethos I., a period of 2000 years, an abundant length of time to account for all the difference of form and color that might have existed in that monarch's day.

"A new Law is coming to view," says Principal Dawson; "it is that species, when first introduced, have an innate power of expansion, which enables them rapidly to extend themselves to the limits of their geographical range, and also to reach the limits of their divergence

into races. These limits once reached, the races run on in parallel lines until they one by one run out and disappear. According to this law, the most aberrant races of men might be developed in a few centuries, after which divergence would cease and the several lines of variation would remain permanent, at least so long as the conditions under which they originated remained. This new law, which was hinted at long ago by Hall, the Palæontologist of New York, is coming more distinctly into view, and will probably altogether remain one of the imagined necessities of a great antiquity of man. It may prove also to be applicable to language as well as to physical characters."

In the preceding chapter, on the *Unity of Mankind*, we have seen from authentic history that a far shorter period than 2000 years has served to turn white Jews into Hindoo blackness, and to convert the feeble, ill-formed and stupid Ostiaks into the noble and handsome race of the Hungarian nobility. These and the many other facts there adduced sufficiently answer the objections from the early development of Races, which have been urged against the Scripture history, and in favor of an indefinite antiquity for the human family.

5. *Difficulty presented by the existence of various distinct Languages in very remote times.* Those holding that all languages, like the different races of men, are simply and solely divergent growths from one primitive stock or tongue, claim, on the ground of the vast length of time they conceive necessary to develop after this manner these languages, that the human race must date back far

beyond the period assigned in Scripture to the Deluge of Noah.

Those who believe in the Bible, as the word of God, find no special difficulty in regard to the early existence of diverse languages. To them the confusion of tongues, by Divine interposition, at Babel, supplies a sufficient and satisfactory explanation of this matter. "And the Lord said, Behold the people is one, and they have all one language; and this they begin to do: and now nothing will be restrained from them, which they have imagined to do. Go to, let us go down, and there confound their language, that they may not understand one another's speech. So the Lord scattered them abroad from thence upon the face of all the earth. And they left off to build the city. Therefore is the name of it called Babel (confusion), because the Lord did there confound the language of all the earth."*

But those who raise and urge this objection, as a matter of course, refuse to accept this in anywise as an explanation. We have to meet them, therefore, on their own ground. They maintain that languages have been the product of slow variation in speech, carried on for ages in different directions among people living in different regions, amid different circumstances, and following different modes of life; in other words, the growth of time and circumstances. The new scenes and objects amid which such tribes or nations would find themselves would call for new names, and new inventions, pursuits

* *Genesis xi. 1-9.*

and emergencies for new modes of expression. Old terms for convenience would be abbreviated or compounded, and pronunciation and inflection from taste or necessity be changed. Meanwhile other words and phrases and pronunciations would pass out of use, and be forgotten. Thus, perpetual variation would keep pace with the flow of time, so that in the course of successive generations, not only the form and sound of words, but also the very structure of a people's language would come to differ wholly from those of other people's separated from them during all these ages. The process would be gradual, and of necessity slow; yet languages radically different are known to have been fully developed in very early times. According to the Arundelian marbles, Homer wrote in *Greek* his *Iliad* and *Odyssey* about the middle of the ninth century before Christ; the Vedas were written in *Sanskrit*, in the opinion of Müller not later than 1200 B. C.; the Pentateuch in *Hebrew* as early as 1500 B. C.; and the *Coptic* was the living language of Egypt in the days of Joseph, or 1700 B. C. Now, it is maintained that the full development of these and other languages at these very early dates is altogether irreconcilable with the Bible chronology, and that the human race, therefore, must be of vastly greater antiquity than any legitimate interpretation of that book will allow.

We admit that the above causes have been at all times and in all regions of the globe at work, slowly but constantly varying and multiplying human tongues. We believe that the language of a country, like its population, is in a state of perpetual fluctuation; in the one,

individuals are constantly dying and dropping away, while others are born and introduced upon the stage; so, but more slowly, in the other, some words become obsolete and forgotten, while new ones are coined and adopted. Conceding all this, we maintain nevertheless, that the length of time from the Flood down to Joseph—a period of 1500 years—even on this ground, was amply sufficient to account for all the diversity of tongues that can be shown to have existed in his day.

Language, we have said, like those who use it, is in course of perpetual change. As the living population of no country can be said to be over 80 or 90 years old, so neither does the living language of any people run back beyond 800 or 900 years into the past. “None of the languages of modern Europe,” says Lyell, “are a thousand years old. No English scholar who has not specially given himself up to the study of Anglo-Saxon can interpret the documents in which the chronicles and laws of England were written in the days of King Alfred; so that we may be sure that none of the English of the nineteenth century could converse with the subjects of that monarch if these last could now be restored to life.”

The same holds true of Germany. “They who now speak German, if brought into contact with their Teutonic ancestors of the ninth century, would be quite unable to converse with them, and, in like manner, the subjects of Charlemagne could not have exchanged ideas with the Goths of Alaric’s army, or with the soldiers of Arminius in the days of Augustus Cæsar. So rapid,

indeed, has been the change in Germany, that the epic poem called the *Nibelungen Lied*, once so popular, and only seven centuries old, cannot now be enjoyed except by the erudite.

“If we turn to France, we meet again with similar evidence of ceaseless change. Chevalier Pertz has printed a treaty of peace a thousand years old, between Charles the Bold and King Louis of Germany (dated A. D. 841), in which the German king takes an oath in what was the French tongue of that day, while the French king swears in the German of the same era, and neither of these oaths would now convey a distinct meaning to any but the learned in these two countries.

“So also in Italy. The modern Italian cannot be traced back much beyond the time of Dante, or some six centuries before our time. Even in Rome, where there had been no permanent intrusion of foreigners, such as the Lombard settlers of German origin in the plains of the Po, the common people of A. D. 1000 spoke quite a distinct language from that of their Roman ancestors or their Italian descendants, as is shown by the celebrated chronicle of the monk Benedict of the Convent of St. Andrea on Mount Soracte, written in such barbarous Latin, and with such strange grammatical forms, that it requires a profoundly skilled linguist to decipher it.”* So pass ancient languages out of use, and so spring up new ones in their stead.

In view, then, of facts clear and definite and certain,

* Lyell's *Antiquity of Man*, pp. 459, 460.

such as the above, the remote existence of distinct languages offers no foothold for serious objection to the Bible history of mankind. For it is manifest, that even by the early day of Abraham, twelve centuries after the Flood, the simple course of natural variation in human speech *alone* was fully adequate to develop numerous and distinct languages among the widely dispersed descendants of Noah. The author of *The Genesis of the Earth and of Man*, who has few equals as a linguist, speaking of the original language of Canaan (page 248), says: "Reckoning about seven centuries to have elapsed between the dispersion from Babel and the arrival of Abraham in Canaan, we have what we regard as a sufficient length of time for the gradual individualization of the Hebrew and the Aramaic, partly by means of natural development and partly by foreign influences; and in like manner, and in about the same period, we may suppose the principal dialects of Arabia to have assumed their distinct individualities."

Plainly connected with *natural causes* is to be recognized the Divine Hand in this matter. Speaking of the Scripture account of the confusion of tongues, Bunsen says: "It is truly wonderful—it is a matter of astonishment—it is more than a mere astounding fact that something so purely historical, and yet divinely fixed—something so conformable to reason, and yet not to be conceived of as a mere natural development—is here related to us out of the oldest primeval period; and which now, for the first time, through the new science of philology, has become capable of being historically and philosophically explained."



ARCHÆOLOGY

AND

PRIMEVAL MAN.

For the last half-century, the occasional occurrence, in various parts of Europe, of the bones of man or of the works of his hands, in cave-breccias and stalactites, associated with the remains of the extinct hyena, bear, elephant or rhinoceros, has given rise to a suspicion that the date of man must be carried further back than we had heretofore imagined.—LYELL.

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THE STONE, BRONZE, AND IRON AGES: THE RELICS REGARDED AS CARRYING THE ANTIQUITY OF MAN BEYOND THE BIBLE RECORD—1. THE DANISH PEAT BEDS; 2. THE DANISH SHELL MOUNDS; 3. SWISS LAKE-DWELLINGS; 4. DISCOVERIES IN THE VALLEY OF THE MISSISSIPPI; 5. THE VALLEY OF THE NILE AND ITS RELICS; 6. CAVE BONES AND IMPLEMENTS: SIBERIAN CARCASSES.



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ARCHÆOLOGY

AND

PRIMEVAL MAN.



THE term Archæology was confined, until a comparatively recent period, to the study of Roman, Greek and Egyptian art. The word, however, literally signifies the description of ancient things; and it has now been universally adopted in its largest sense to give name to the science which deduces history from the relics of the past.

The science of Archæology is closely connected with that of Geology; they are like two successive links in a chain of investigation, the earliest data of the archæologist being found exactly where those of the geologist end—in the later alluvial formations of the earth's surface.

A desire to know something—to know all that can be known—concerning those who have occupied the earth before us, is quite natural to all men, as natural as to inquire what shall come to pass in the future.

Hence the peculiar interest with which history has ever been read. And hence, too, after having traced all written records back to their remotest dates, this yearning after further acquaintance with our ancestors in the distant past, has led inquiring minds to lay hold with avidity on whatever offered to help them to pierce still beyond into pre-historic time. And within the past half a century many interesting relics of man, and many curious articles of his workmanship, have been brought to light, not a few of which are supposed to antedate the earliest periods of written history. And among the many inferences that have been drawn from these remains of antiquity is this, that Man must have been a tenant of the earth for a period immensely longer than that indicated by the Bible history.

The Bible, it will be borne in mind, according to the chronology based on the Greek version, places the creation of Man 2262 years before the Deluge, 5509 years before Christ, and 7382 years before the present writing. And the position we take, and which we shall now undertake to establish is, that no discoveries yet made invalidate these figures, or offer anything deserving the name of proof that the human Race is of higher antiquity than these dates will cover.

Ancient remains, such as arms, implements, ornaments and other articles of man's workmanship, of which a great number and variety have been discovered in different countries, have been by antiquarians classified under three heads, according as they are made of stone, bronze, or iron; and those included respectively in these

classes are held to represent three successive stages in human progress, and each stage to have extended through an indefinite number of ages, while all three added together give to Man as an occupant of this planet an antiquity that is appalling to contemplate. In discussing this matter, then, we ask the reader's attention first to this classification.

The Stone, Bronze, and Iron Ages.—The advocates of Man's great antiquity assume that he first appeared among the living tenants of our globe in a state but a little above that of a mere brute, with mental faculties so contracted and moral perceptions so faint, as to be "scarcely worthy to be called a man." At first, picked-up stones with a suitable surface, or a convenient point, or a sharp edge, were his only implements; in process of time he reached the thought and acquired the ability of improving these by splitting, chipping, or rubbing them with other stones, and finally by polishing them: this was *The Stone Age*.

After long and slow progress in the use of stones, he advanced to a higher stage; he became acquainted with copper, and learned to make use of it; this in time he managed to improve by an admixture of tin with it, thus converting it into bronze. The great number and variety of objects found of this alloyed metal are regarded as indicating a very long period in its use: this was *The Bronze Age*.

At length a time arrived when another forward step was taken; bronze in its turn gave way to iron, the latter being found far better for the manufacture of tools,

weapons and all kinds of cutting instruments; and this remains in use to the present day: this is *The Iron Age*.

These three "ages" are held to represent, not only so many stages of improvement in art, but also three very distinct periods of time in the history of our Race. Accordingly antiquarians have proceeded to establish for various countries a system of chronology on this basis. Any tomb or mound, for example, in Denmark containing traces of iron, is ascribed to the Iron Age which is supposed to go back to about the beginning of the Christian era; those containing arms, or implements or ornaments of bronze, are assigned to the Bronze Age a period of from one to two thousand years preceding that era; and those devoid of all traces of metal of any kind are put down as dating from the Stone Age, which embraced all previous time of man's occupation of that part of the world, amounting it might be to two, five, or even ten thousand years. Such is the theory of the Stone, Bronze, and Iron Ages.

Now, all this, let it be observed, is not established truth or fact, but a mere hypothesis or conjecture. That man began his existence as a savage—that the meagre and dubious relics of the so called Stone Age represent his condition in the first period of his history—that this stone age was at any time universal on the earth—that all nations have passed through these successive ages—that they represent any definite or definable periods of human history; all this is *sheer assumption*. "They talk," says the Duke of Argyll, "of an Old Stone Age and of a Newer Stone Age, and of a Bronze Age, and

of an Iron Age: now there is no proof whatever that such ages ever existed in the world."*

Admitting that mankind have passed through these several stages, they offer no possible ground or data for calculating the age of the race in general, or of any nation in particular. For, as human improvement from one into another would have been a gradual and continuous process, these ages (supposing them to have existed) must have overlapped, intermingled, and faded one into the other as undefinably as the colors in the rainbow; no lines could be drawn between them from which their respective breadths could be estimated. Again, among a people living in a country of rich soil, genial climate, and abounding with favorable materials, invention and progress might have gone on far more rapidly than among others, whose lot, in these respects, was the reverse of all this. Hence the Stone, or the Bronze, or the Iron Age of a nation such as the former, might not have been one-fourth, or one-half, or even one-tenth as long as the corresponding age to a nation such as the latter. It follows further from this, that what was an age of stone in one part of the world might have been an age of iron in another; and this beyond doubt was actually the fact. At the period in which Archæologists represent the northern nations of Europe as having no better tools or arms than those made of flint or bone, the Egyptian and Assyrian Empires we know had their arms and chariots of iron; and at the

* *Primeval Man*, p. 180.

date when the Britons and Scandinavians are said to have been in their Bronze Age, the Hebrews, Etruscans and Phenicians bent their bows of steel. In short, these "Ages" may be found co-existing on the earth at this very day. Even the Stone Age is not altogether gone by yet. The sun of yesterday in his circuit round the globe looked down and beheld in this region the Locomotive, the Iron Steamer, and the rifled cannon, and in that the thonged sledge, the log canoe, and the flint-pointed arrow; while its beams fell upon gold and silver coinage circulating among one people, and upon beads and cowries passing as currency among another.—From all this, it is sufficiently obvious that these ages of Stone and Bronze and Iron as measures, or even as indications of the lapse of time, are utterly indefinite, and that no calculation of the age of the human race or of a solitary nation, can be based upon them.

The remoteness of the *earliest* of the periods that archæologists would represent by these "three ages" has, undoubtedly, been vastly overestimated by many of them. We need not quit the light of history and plunge into the obscurity of unrecorded or imaginary ages, to find the nations foremost in civilization using both bronze and stone implements.

Stone implements continued in use to the battle of Hastings, in England, and to the wars of Wallace, in Scotland.* The Latin poets and historians, while the arms and instruments they describe are for the most

* See *The Celt, the Roman, and the Briton*, p. 72.

part of iron, yet speak of those made of bronze; Virgil gives bronze arms to the warriors of his *Æneid* as well as to some of the people of Italy. Going back to the earlier writers of Greece, we meet with more frequent mention of bronze. Hesiod, writing 850 B. C., mentions a time when bronze was the prevailing metal in use. And Homer, a century earlier, though both bronze and iron were known in his day, speaks of the sling as an important weapon of war, and describes his heroes as throwing stones at each other. And rough purposes, such as those of war, were not the only uses made of stones; they were often formed into instruments for cutting, drilling and piercing other materials. Solemn treaties among the Romans were, according to Livy, ratified by the sacrificing of a hog with a "sharp stone" during the Punic wars. And if we go back to the time of Moses, though both iron and bronze are repeatedly mentioned in the Pentateuch, we shall find the Hebrews on several occasions using *knives* of stone. The rite of circumcision as practised by them when they came out of Egypt was performed with sharp stones or flint, and notably in the case of Joshua circumcising the children of Israel at Gilgal.* In the account of Joshua's burial, as given in the Septuagint version, it is stated that the *stone knives* were laid in his tomb. And we have no reason to doubt that stone knives and stone implements were in frequent use among other and surrounding nations also at that day. Stone arrow-heads have been

* See *Joshua* v. 2, 3. The English Bible here has "sharp knives," but in the Hebrew the words are *charboth tsurim*, *Knives of rock or flint*.

found occasionally even in the tombs of the ancient Egyptians. We see then that authentic history carries us back, not only to the age of bronze, but to the use of stone weapons and stone knives. Yet had the sharp flints employed to circumcise Israel at Gilgal been stumbled upon, or had the stone knives buried beside the Leader of God's people been by chance discovered, we have much reason to apprehend that floods of ink had been shed, and treasures of learning expended by some archæologists, to prove them relics of a mysterious antiquity, probably antedating the Deluge by some thousands, if not tens of thousands of years.

Moses flourished some 1700 years after the Deluge; and if stone instruments were thus employed in his day, in the central and most enlightened region of the earth, we may reasonably suppose that in preceding ages they were in much more common use, especially among those ruder tribes that had wandered into distant parts, such as those that followed the streams of the Volga, the Danube, and other rivers into the deep forests and among the remote mountains of Europe. During these seventeen centuries, then, and the next thousand years that followed, there elapsed time enough assuredly for the fabrication and deposit of all the stone implements and other relics of man that have yet been discovered in that quarter of the globe.

Leaving now these imaginary "Ages" in human progress, we advance to consider severally the particular archæological discoveries, which are regarded as offering the strongest proof that the human Race is of greater

antiquity than can be reconciled with the Bible history.

1. *Danish Peat-Beds*.—In various parts of Denmark there are to be met with deposits of peat, occupying natural depressions or hollows in the surface of the ground. These vary in depth from ten to thirty feet. Low down in them are found trunks of Scotch fir; this tree is not now a native of the Danish Islands. Higher in the deposit, trunks of the common oak are discovered, which is now a rare tree in the country. Higher still lie the remains of the beech, which still lives and flourishes there. Mixed up with these are many human relics; these differ in their character, and are said to correspond with the different ages of the vegetation; a flint instrument was found close to the trunk of a fir tree, bronze implements have been taken out of the peat at the depth in which oaks abound, while traces of iron have been found only among the beech or near the surface. In these relics antiquarians recognize at once the Stone, the Bronze and the Iron Age; and upon these deposits of peat and the relics they contain has been based a calculation, or rather, as we should say, a *conjecture*, that gives to Man an antiquity that is measured by tens of thousands of years. We are called upon first to consider the vast length of time required for the slow growth of this great depth of peat; and then, to deepen our impression of this lapse of time, we are bidden to reflect upon the cycles of ages that must have passed away during the growth, continuance and extinction of these three successive classes of vegetation, the

very last of which alone, the beech, carrying us back beyond the Christian era—how far into the past, then, must we travel to find the beginning of the oak? and we have not yet reached the advent of man into these islands, for he roamed amid the dark and moaning forests of pine that flourished long before even all this! Such is the train of reflection on which some of our antiquarians would set us.

While all this may seem plausible reasoning, it is reasoning that has no better foundation than the peat-bog upon which it is employed. Let us look at the several particulars involved. As to the time assigned for the growth or deposit of the peat, it is simply a guess, for we have no data on which to base any calculation. In certain localities and under certain circumstances this may go on much faster or much slower than in other localities and circumstances. "Differences in the humidity of the climate, or in the intensity and duration of summer's heat and winter's cold, as well as diversity in the species of plants which most abound, would cause the peat to grow more or less rapidly, not only when we compare two distinct countries in Europe, but the same country at two successive periods."* Such is the testimony of Sir Charles Lyell. And Carl Vogt speaking on this subject says, "We neither know generally within what time a stratum of peat one foot thick may grow, nor do we possess any scientific data to calculate the quantity of growth within a given time of any indi-

* *Antiquity of Man*, p. 111.

vidual peat-moor; that the growth must differ in various moors; that even in a given locality it must have differed during certain periods, is easily imaginable."* In further refutation of the extravagant estimates made by De Perthes and others of the time required for the deposit of peat, we may add a well-established fact: "The overthrow of a forest by a storm, about the middle of the seventeenth century, gave rise to a peat-moss near Lochbroom in Ross-shire, Scotland, where in less than half a century after the fall of the trees, the inhabitants dug peat."†

As to the succession of forest trees in the Danish peat, the fir, the oak and the beech, no great lapse of time is necessary to produce two changes, such as are here supposed; a single generation in a rapidly cleared country will witness one such change. Farms cleared in many parts of the United States, and then abandoned, have been known in the course of a few years to send up a crop of trees altogether different from those of the original forest that grew there. The chestnuts of the forests of Virginia, east of the Blue Ridge, and of the Mississippi, die, and pines grow upon their remains.

In parts of Southern Ohio, a forest of unmixed locust-trees follows the destruction of the ordinary mixed forest. Dwight, in his *Travels*, gives an account of the appearance of a fine growth of hickory on lands in Vermont which had been permitted to lie waste, when no such trees were known in the primitive forest within a

* *Anthropological Review*, No. 17, p. 209.

† Lyell's *Principles of Geology*, Vol. II., p. 505.

distance of fifty miles. The same authority also relates the appearance of a field of white pines, on suspension of cultivation, in the midst of a region where the native growth was *exclusively* of angiospermous trees. Caesar affirms that in his time both the beech and the fir were wanting in England; but both we know have now abounded there for many centuries.

And as to the human remains in the peat-beds of Denmark, allowing that the first occupants of that country were a low and ignorant tribe, using stone implements only, we are by no means necessitated to believe or to admit that these must have continued there through long and slow ages of improvement, in order to account for the bronze articles; the country while in their possession might have been invaded and taken by a more intelligent and civilized race, who introduced *at once* arms and implements of bronze; and in a similar way these again might have been overcome by others still superior to themselves, who introduced as suddenly the knowledge and use of iron tools and weapons. Nothing in human history has been more common throughout the world than for the strong thus to invade and occupy the territory of the weak, carrying with them their habits, their arts and their civilization. Or, the primitive inhabitants of Denmark, as has often happened, might have acquired their knowledge of these metals, and of the uses to which they might be put, from some other more advanced people, and by peaceful traffic with them in the course of a single generation bring them into general use among themselves. That these successive

stages of improvement from the use of stone implements to that of bronze, and from bronze to iron, were native growths, is a mere assumption, and an assumption, too, against strong probabilities.—“Conquest alone,” says a writer in the *London Quarterly*, “would serve to explain the apparent connection between a change of vegetation and a change in human implements; for an invading tribe would be very likely to destroy forests which harbored the native inhabitants, extirpating one and subjecting the other contemporaneously.”

2. *The Danish Shell-Mounds.*—Along the shores of nearly all the Danish Islands, peculiar mounds of various forms and sizes may be seen, consisting mainly of vast numbers of cast-away shells of the oyster, cockle, and other mollusks, of the same species as those which are now eaten by man. These mounds vary in height from three to ten feet, and are some of them 1000 feet long and from 150 to 200 feet wide. They are rarely situated more than ten feet above the level of the sea, and are confined to its immediate neighborhood. The name given by the Danes to these mounds is *Kjökkenmodding*, or “kitchen-refuse-heaps.”

The shells of which they chiefly consist are plentifully mixed up with the bones of various quadrupeds, birds and fish, which served as the food of the rude hunters and fishers by whom the mounds were accumulated. Scattered all through them also are flint knives, hatchets, and other instruments of stone, horn, wood and bone, with fragments of coarse pottery, mixed with charcoal and cinders, but with no implements of either iron or bronze.

Now, the arguments offered to prove the great antiquity of the builders of these mounds are based on these three things, the stone implements, the animal remains, and the size of the shells, which are found in them.

As to the "flint knives, stone hatchets," etc., it is plain from what has already been stated, that no very extraordinary antiquity can be claimed for these, as such instruments have been in use in all historic ages, and are in use even now in some parts of the world. The colonists of Austin, as late as 1822, had to fight with the Carancahuas and other tribes of Indians in Texas, armed with bows and arrows with flint points, barbed and shaped like those found at Abbeville in France, and scattered over the surface and imbedded in the alluvium of the whole continent of North America. The wandering nomads of the Southwestern Prairies made, and used for hunting and fighting, the same stone weapons at a later period still.

The same may be said of the animal remains. All quadrupeds, whose bones have been found in these heaps, belong to species known to have inhabited Europe within the memory of man, excepting one, the wild bull (*Bos Urus*), but even this animal was seen by Julius Cæsar, and survived long after his time. Among the bones of birds are many of the auk or penguin, now supposed to be extinct in Europe, but survived till lately in Iceland, and still survives in Greenland. Remains of the beaver, red deer, lynx, fox and wolf are plentiful; but of no domestic animal save the dog has any trace been found. There is, therefore, among all these animal remains

nothing that can be counted as indicating high antiquity.

And as to the shells—these are regarded as offering the strongest proof of antiquity; all that have been found are of species still living. Among them is the common eatable oyster in its full size; but this cannot live at present in the brackish waters of the Baltic, except near its entrance, where the ocean pours in a great body of salt water; yet during the whole time the shell mounds were accumulating, the oyster must have flourished in those localities where it cannot now live. So also the eatable cockle, mussel and periwinkle are found in great numbers and of full ocean size in the refuse heaps, “whereas the same species now living in the adjoining parts of the Baltic only attain a third of their natural size, being stunted and dwarfed in their growth by the quantity of fresh water poured by rivers into that inland sea.” From these facts it is inferred that since the days of the primitive hunters and fishers of the Danish Isles, a great change must have taken place in the relation of the Baltic to the North Sea; that formerly the waters of the latter must have had a much freer access into those of the former than at present; and that to effect this physical change must have occupied a very lengthy period of time.

Such a change in the relative elevation of sea and land as is supposed in this inference does not necessarily imply a vast period. Established facts, indeed, indicate the contrary, and that the salt water of the ocean rushed into the Baltic basin at no very remote period; Sir Charles

Lyell tells us that even in the course of the present century, the salt waters have made one eruption into the Baltic by the Limfiord. It is also affirmed that other channels were open in historical times which are now silted up." And the same author, speaking of the oscillations to which this northwest quarter of Europe is subject, says, "The level of the land may oscillate; and for centuries there may be a depression, and afterwards a re-elevation of the same district. Some phenomena in the neighborhood of Stockholm appear to me only explicable on the supposition of the alternate rising and sinking of the ground since the country was inhabited by man."* Now, all this may be, and naturally would be equally true of the neighboring peninsula of Jutland, which stretches its length between the ocean and the entrance of the Baltic. There are, in fact, clear evidences that this district is at present actually rising from the sea.—No very great lapse of time, therefore, is necessary to account for the change in the saltiness of this inland sheet of water.

Large heaps of oyster and other marine shells, similar to those of the Danish islands, containing various flint and stone implements, are to be found in the United States, both in Massachusetts and in Georgia, left by the native Indians, at points near to which they were in the habit of pitching their wigwams. "At the present day, there are tribes of Indians in British North America, who form such refuse heaps still; while contemporary

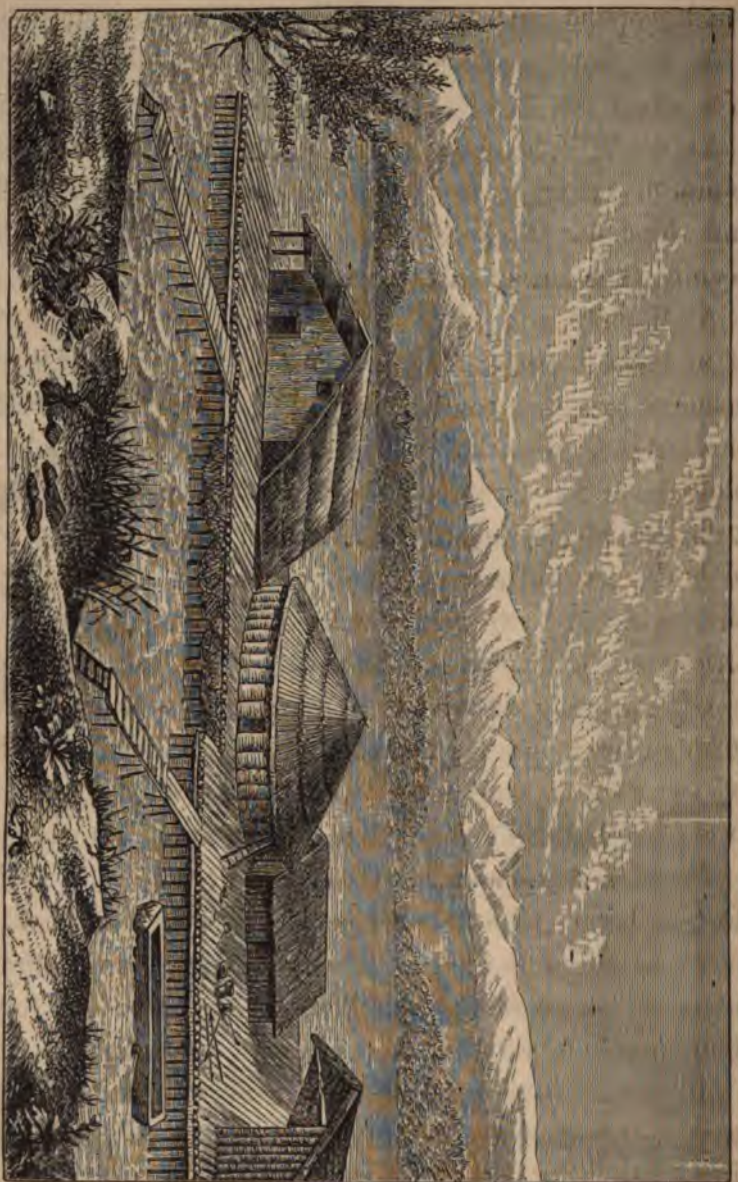
* See *Principles of Geology*, Vol. II., Chap. XXXI.—11th Ed.

with them, there are others who have no such customs. Would any one, therefore, be warranted to conclude that these refuse-heap makers are greatly more ancient than the others?"* And as for the extinction of the oyster along the Danish shore, the fact offers no ground whatever for inferring any great antiquity. "In Maine," says Professor Hitchcock, "we can prove that the oyster became thus nearly extinct within the time of the white population."

3. *Swiss Lake-Dwellings*.—These were discovered and brought to notice some twenty years ago. The winter of 1854 was remarkably dry in Switzerland, the lakes and rivers fell far below their usual level, and the inhabitants of Meilen, on the Lake of Zurich, resolved to raise the level of some ground and turn it into land, by overlaying it with mud obtained by dredging in the adjoining shallow water. In carrying on these dredging operations they discovered a number of wooden piles deeply driven into the bed of the lake. These, as soon became evident, had supported human dwellings. Among the piles hundreds of implements, resembling those of the Danish shell-mounds, were dredged up with the mud, such as hammers, axes, celts, and other instruments.

These discoveries led to the exploration of many other lakes, which resulted in similar developments. No less than two hundred distinct settlements have been found in these various waters; and it is believed that as many as three hundred wooden huts were sometimes comprised

* Professor Dups' *Science and Christian Thought*, p. 228.



SWISS LAKE DWELLINGS.

in one settlement. These huts rested on platforms which were supported by the piles, and were connected with the shore by a narrow causeway of similar formation, which could be withdrawn at pleasure.

At the bottom of the Lake of Bienne, a canoe was found, made of the trunk of a single tree, fifty feet long and three and a half feet wide, which seemed to have been capsized when laden with stones.

At Wangen, on Lake Constance, among the remains of an aquatic village, hatchets of serpentine, and arrow-heads of quartz were dredged up. Here, too, fragments of a kind of cloth, supposed to be of flax, not woven, but plaited, were detected. Carbonized wheat, barley, and grains of another kind, together with flat round cakes of bread, have also been met with, showing plainly that the inhabitants were tillers of the ground, and cultivated these cereals.

Carbonized apples and pears of small size, such as still grow in the Swiss forests, stones of the wild plum, seeds of the raspberry and blackberry, and beech-nuts, also occur in the mud, and hazel-nuts in great plenty.

Near Morges, in the Lake of Geneva, no less than forty hatchets of bronze were dredged up, and in many other localities the number and variety of weapons and utensils discovered, in a fine state of preservation, is truly astonishing.

In some of these water-settlements, a mixture of bronze and iron implements and works of art have been found, including coins and medals of bronze and silver, struck at Marseilles, and of Greek manufacture, belonging to the early Roman period.

The remains of a great variety of animals have been met with; Rütimeyer enumerates twenty-four species of mammalia, eighteen species of birds, three of reptiles, and nine of fresh-water fish. All these are found still living in Europe.

In all these aquatic villages, even in the very earliest of them, several domestic animals have been found. The ox, sheep, goat, the horse, the ass and the dog have been recognized. The goose and the duck are also frequently met with. In a few places traces of the domestic cat likewise have been observed.

Amidst all this profusion of bones, but very few belonging to Man have been discovered. A skull, however, in a good state of preservation was taken up from Lake Zurich, at Meilen, and has been carefully examined by several. Professor His pronounces it of a type very like that which prevails among the living population of Switzerland; so that as far as any conclusion can be drawn from a single specimen, there has been no marked change in the form of the inhabitants of that country since the period of the Lake-dwellings.

Such, in brief, are the celebrated Swiss Lake-habitations, and the discoveries that have been made in connection with them. Now, our point is, what bearing have all these on the question of Man's antiquity? A careful consideration of all the facts leads us to the following replies:

We find here no certain evidence of any very high antiquity. These aquatic settlements appear to have been occupied by one generation after another, and the



relics of these dropping successively to the bottom of the water, have become so confusedly mingled, that no definite conclusion can be reached, at least in regard to many of them, as to the time in which they were built or destroyed. Like villages on the land, their origins doubtless date from different periods. Some of them clearly belong to the earlier times of the Romans, and some of them to the latter; those of Noville and Chevannes are referred by antiquarians to the sixth century of the Christian era.

The coins, medals, and articles of iron found, speak for themselves, and offer unquestionable evidence that they belong to a comparatively recent period, and one of an advanced state of art and civilization.

The cultivation of the cereals, and the presence of all the modern domestic animals, plainly point to a similar condition of things. The occupants of these Lake-dwellings were no mere savages; as Oswald Heer informs us, they raised two distinct breeds of cattle, cultivated five kinds of wheat, and three kinds of barley; among them was the wheat commonly called Egyptian, a fact leading to the inference that the Lake-dwellers had either come originally from the south, or had intercourse with some southern people.

Even their stone implements imply acquaintance and intercourse with remote countries. The *flint*, of which they formed various articles, must have come from a considerable distance, probably from the south of France. And the *jade*, from which they made hatchets and wedges, is not to be found in Switzerland nor in any of

the adjoining parts of Europe. The *amber*, likewise, which has repeatedly been found, it is supposed must have been imported from the shores of the Baltic.—All these things seem to bring the earliest of the lake settlements within the pale of a comparatively modern civilization.

“These aboriginal Swiss,” says Professor E. Fontaine, “certainly lived before the conquest of the Helvetii, or half a century prior to the Christian era; and they may possibly have been contemporary with the Pœonians of Lake Prasias, mentioned by Herodotus, who about 520 B. C. lived, he tells us, in houses which ‘were built on a platform of wood supported by wooden stakes, while a narrow bridge, which could be withdrawn at pleasure, communicated with the shore.’”^{*} Herodotus further informs us that these Pœonians preserved their independence during the Persian invasion, and defied the attacks of Xerxes by the aid of the peculiar position of their dwellings.

From all that has yet been discovered in connection with these pile habitations of the Swiss Lakes no proof can be derived of any very high antiquity,—certainly none that affects the chronology of Scripture history.

4. *The Mississippi Discoveries.*—The Valley and Delta of the “Great Father of Waters” have been a fertile field for theories. From time to time various strange discoveries therein have been reported, and more than once the public have been startled by the learned calculations

^{*} *How the World was Peopled*, p. 69.

sent forth of the vast antiquity of some of these; and by the sceptical they have been seized and hastily construed into evidence against the Bible account of the origin of the human race. To notice severally these remarkable discoveries, and the wild calculations based upon them, would be tedious and unnecessary. Our purpose will be fully answered by a reference to one or two of them, as this will sufficiently show what estimate should be set on the rest.

One instance of which we are about to speak was of so marked a character as to attract the attention of such a man as Sir Charles Lyell, and to secure a notice in his great work on the antiquity of Man. Speaking of the great Valley he says, "In several sections, both natural in the banks of the Mississippi and its numerous arms, and where artificial canals had been cut, I observed erect stumps of trees, with their roots attached, buried in strata at different heights, one over the other. I also remarked that many cypresses which had been cut through exhibited many hundreds of rings of annual growth, and it then struck me that nowhere in the world could the geologist enjoy a more favorable opportunity for estimating in years the duration of certain portions of the recent epoch." This statement is made with reference to and in connection with a discovery then recently made in an excavation at New Orleans, for certain gas-works. "In this excavation," he says, "at the depth of sixteen feet from the surface, beneath four buried forests superimposed one upon the other, the workmen found some charcoal and a human skeleton, the

cranium of which is said to belong to the aboriginal type of the Red Indian race. The chronological calculations of Dr. Dowler ascribe to this skeleton an antiquity of 50,000 years." While Lyell refrains from expressing his opinion of this astounding calculation, he deems it of sufficient value to give it a place in his book. But to show how unreliable and baseless such a computation is, we need but state a few well-known facts.

In the lower part of its course, that is, below Cairo, the Mississippi flows through a low, flat, and recently formed alluvium, varying in width from twenty-five to fifty miles; in this it perpetually shifts its channel, deviating on this side or on that from ten to twenty miles in less than one century. In times of high water it undermines its banks, and often engulfs acres together of the forest or plantation that may lie along its flood. In this way, ancient mounds and modern graveyards are promiscuously swept away, whilst the forsaken portions of its bed, being composed of the richest soil, speedily send up rank vegetation which in the course of a few years obliterates every trace of the stream. Indeed, this work of destruction and renovation is accomplished so rapidly, that vessels now navigate its deepest current where forests grew or plantations flourished twenty years ago. When this river was surveyed by the United States government some fifty years since, all its islands were numbered from the confluence of the Missouri to the sea; but every season makes such revolutions, not only in the number but in the magnitude and situation of these islands, that this enumeration is now almost obso-

lete. Sometimes large islands are entirely melted away; at other places they have attached themselves to the main shore, or, which is the more correct statement, the interval has been filled up by myriads of logs cemented together by mud and rubbish.

From these facts it is sufficiently evident that no reliable calculation can be made as to the age of any relic, whether of man or of beast or of vegetable growth, which may be found buried in such a loose and movable soil. The remains of trees that grew and of animals that lived in localities separated by hundreds of miles, or at periods divided by thousands of years, when swept down as far as New Orleans or the Delta, may be found lying side by side; or, even the more recent relic buried at the depth of a hundred feet, while the more ancient occupies a grave quite near the surface.

"The age of no fossil," says Professor E. Fontaine, "found in the alluvium of the present Delta of Louisiana can be determined. The average depth of the river is about 100 feet for the lower 125 miles of its course, and its bottom current flows as swiftly as its surface, and the average velocity is about four miles per hour. Opposite New Orleans, the soundings for Harrison's Map of 1847, in the New Orleans Academy of Sciences, showed a depth of from 162 to 187 feet. Mr. Alfred Hennen, who had lived in the city sixty years, in 1867 told me that he recollected when the deep channel of the river flowed where Tchoupitoulas street is now built, in the heart of the business part of it, a quarter of a mile from the present shore. By undermining and

engulfing its banks, with everything upon them, logs tangled in vines, and bedded in mud, cypress-stumps, Indian graves, and modern works of art, are suddenly swallowed up and buried, at all depths, by its waters, from 10 to 187 feet. The deep channel then works its way from them, and leaves them beneath a deep soil of inconceivable fertility, which quickly produces above them a dense forest of rapid and short-lived growth; first of cypress, remote from the shore, with willows and cotton-wood next to its receding current; then of live-oak, hackberry, and elm, with a variety of other trees. But the restless and resistless giant soon returns with a sweeping curve, and invades the land of the oaks, and of the cypress also; and undoes quickly all the work of a quarter of a century, or of an age, to do it over again. In 1856, an artesian auger penetrated a cedar log eighteen inches thick, which it had buried 157 feet beneath the pavement of Canal street. In digging the foundation of the gas works (referred to by Lyell), among burnt wood, cypress logs, and materials of all kinds floated from the great valley above, the skeleton of a man was found, and which was buried sixteen feet beneath the surface. This created much wonder; and Dr. Dowler and others, who believe the pre-Adamite existence of men in America, decided that he belonged to 'the aboriginal American race,' and supposed, with Dr. Nott and Gliddon, that he had lain in that spot 57,600 years! Similar specimens of antiquity may be found, and probably more abundantly, between the present levee and Tchoupitoulas street, where the whole area, to the depth of more

than 100 feet, has certainly been deposited within the period of sixty years.

“Since the gas works were constructed, New Orleans Academy of Sciences was agitated by a report that, in making some deep excavations at Fort Jackson, at a considerable distance from the Mississippi River, and at a depth of fifteen or twenty feet below the surface, a piece of wood had been exhumed, which had evidently been shaped by ‘human art,’ and dressed with ‘tools,’ which indicated the work of ‘a highly civilized race of men.’ It was at once decided by the advocates of the pre-Adamite origin of the *autochthones* of America, that these aborigines, who had inhabited Louisiana 57,600 years ago, were an exceedingly cultivated and highly enlightened people. Several members of the Academy determined to examine the matter thoroughly, and to ascertain what specimen of ancient human art had been turned up by the spade at Fort Jackson. They found the facts precisely as stated. A large piece of *yellow poplar* had been unburied at a great depth, and considerable distance from the river—a distance as great as that occupied by the aboriginal mound in the graveyard of Point à la Hache, above the Forts. It was squared with a broad-axe, bored with an auger, cut with a hand-saw, and was unmistakably—the *gunwale of a Kentucky flat-boat!*

“Fort Jackson was built after the battle of New Orleans, in 1815; and from 1785 to the present year, the Father of Waters has been carefully fossilizing the evidences of the flat-boat trade between the great valley

and New Orleans, and burying at all depths, from 16 to 160 feet, and at all distances from his present bed, from one mile to twenty, the wrecks of the bodies of the boatmen and of their vessels. This immense mass of alluvium, more than three times the thickness of that of the Nile, is all stratified like it, and the layers are colored differently by the variously-tinted waters of its tributaries, like the Nilotic deposits."*—Such are a few specimens of the facts that have been adduced for the overthrow of the Bible account of the origin of the human race, and from them, both the enemy and the friend of that Sacred Volume may well learn a lesson of wisdom.

5. *Valley of the Nile.*—The whole surface of this, like the valley of the Mississippi, is a rich alluvial deposit, brought down by the annual inundations of the Nile. Two French savans have applied themselves to determine the rate at which this has been accumulating. M. Girard, of the French expedition, decided that between Asouan and Cairo, it raises the surface of the valley only *five inches* in a century; and M. Rosière, in his great work on Egypt, has put down the rate of sediment deposited in the Delta at *two inches and three lines* in a century. Taking these refined estimates as fixed bases, many and marvellous have been the calculations made respecting the antiquity of certain fragments of brick and pottery brought to light, according to the depths at which they were found in the alluvium.

* *How the World was Peopled*, pp. 85-87.

Not very many years since, a piece of pottery—"clearly of human workmanship"—was brought up, it was said, from a depth of ninety feet under the alluvial deposit of the Nile. Calculations were immediately set on foot to determine its age, which, according to one or other of the above scales, was placed at figures so enormous, that many were staggered at the idea that man had existed upon the earth through such vast periods. Happily, however, they were soon relieved, for the said piece of pottery, upon more careful investigation, was proved to be of *Roman* origin—a fact that forcibly reminds us of the Kentucky Flat-boat story.

Between the years 1851 and 1854, under the direction of the Royal Society, and the supervision of Mr. Leonard Horner, "two sets of shafts and borings were sunk at intervals in lines crossing the great valley from east to west. One of these consisted of no less than fifty-one pits and artesian perforations, made where the valley is sixteen miles wide from side to side between the Arabian and Libyan deserts, in the latitude of Heliopolis, about eight miles above the apex of the Delta. The other line of borings and pits, twenty-seven in number, was in the parallel of Memphis, where the valley is only five miles broad. In some instances the excavations were on a large scale for the first sixteen or twenty-four feet, in which cases jars, vases, pots, and a small human figure in burnt clay, a copper knife, and other entire articles were dug up; but when water soaking through from the Nile was reached, the boring instrument used was too small to allow of more than fragments of works of art being

brought up. Pieces of burnt brick and pottery were extracted almost everywhere, and from all depths, even where they sank sixty feet below the surface towards the central parts of the valley. All the remains of organic bodies, such as land-shells, and the bones of quadrupeds, found during the excavations, belonged to living species. Bones of the ox, hog, dog, dromedary and ass were not uncommon; but no vestiges of extinct mammalia."

Now, taking the scale of *six inches* rise by sedimentary deposit in a century, the fragments of brick and pottery above mentioned brought up from the depth of sixty feet, have been put down as 12,000 years old!

Another fragment of red brick, we are told, was found by Lint Bey, at the depth of seventy-two feet, and two hundred metres distant from the river. And taking the rate of deposit for the spot where it was found at two and a half inches, it has been calculated that this must have been buried over 30,000 years ago!

These are alarming figures to be put forth on a *single datum*, and that of a very *doubtful* character. The rates of deposit estimated by Girard and Rosière have been pronounced by high authorities as vague and founded on insufficient evidence; and this, of course, strikes at the root of all calculations based upon them.

The sediment of the Nile is derived from its bed and banks, as well as from those of its tributaries in the higher part of its course; now the longer these are worn and washed by repeated floods the less loose material remains within their reach and power to be carried

down. In the course of long periods, therefore, the amount of alluvium deposited during the annual inundations in Egypt must naturally be reduced. Hence, even if these estimated rates of deposit approximated correctness for the *present age*, they would prove nothing in regard to the rate *in ages long since gone by*, when it might, as is obvious, through various causes, have gone on at a much more rapid rate.

Kenrick states that "the earthy matters which the water contains are deposited in different quantities and proportions in the vicinity of the river and at a distance from it. The largest quantity settles close to the stream, the smallest at the edge of the inundation. The annual deposit varies in the same situation from an *inch* to a *few lines*."* Let us take an average between these—a *low* average—say *four lines*, or one-third of an inch; then, according to this rate, if we go back a period of 2160 years, we shall find the surface just sixty feet lower than it is at present, which is exactly the depth of the lowest relic of brick or pottery found by the Royal Society in its borings.

Much stress is laid by Mr. Leonard Horner, at whose suggestion the above borings were undertaken, on the pieces of burnt brick found; and calculating after the above method, he has carried back their date to twice the distance of Adam, forgetting or else unaware that there is no evidence that the Egyptians in early times used any but crude or sun-dried brick, a *burnt* brick

* *Ancient Egypt under the Pharaohs*, Vol. I., p. 67.

being as sure a record of the Roman dominion as an imperial coin. When Sir R. Stephenson was engineering in the neighborhood of Damietta, he found, at a greater depth than Mr. Horner reached, a brick bearing on it the stamp of Mohammed Ali.*

* In the deepest boring of all, at the foot of the statue of Rameses II., the discovery of the Grecian honeysuckle, marked on some of those mysterious fragments which were asserted to be *pre-historic*, proved to have been no older than the age of Alexander the Great.

To say no more of these calculations, it is quite possible that the particular borings, whence these few and insignificant fragments were brought up, might have hit upon some of the ancient canals or reservoirs, into the bottom of which they had been washed; or, peradventure, upon the sites of old wells, from which the Egyptians were in the habit of drawing water in earthen vessels.

But all such fragmentary works of human hands found in Egypt, at whatever depth buried, may be readily and rationally accounted for without insisting on any of these considerations, as the productions of historic times. The Nile, like the great river of North America, flowing through loose alluvial soil, has doubtless many times shifted its channel; during one inundation wearing away the bank on this side, and during another on that side; and thus, like the Mississippi, engulfed and buried whatever might have stood upon them. "The effects of such a mighty volume of water,"

* *London Quarterly Review*, No. 51. 1866.

says Kenrick, "upon the surface of the country through which it is discharged are great; the bank of sand deposited by one flood is mined and scattered by another; and thus its materials gradually travel onward towards their final resting-place in the sea, or in places which the river subsequently abandons. Sometimes the Nile exceeds its normal height and reaches thirty feet, spreading devastation over the country. Houses are undermined, cattle are drowned, and the stored-up produce of former years swept away." * If we suppose all this to have been going on only for the last two or three thousand years, we have in it abundantly sufficient to account for all the relics that have been or are yet likely to be exhumed in this ancient land. We need not resort to baseless calculations, or to the fabulous chronology to which such calculations lead. As in the valley and delta of the Mississippi, so in the valley and delta of the Nile, the handiworks of man may have been thus swept and buried at all depths and all distances along its course.

6. *Cave Bones and Implements.*—In the limestone-formations all over Europe, large fissures are to be found, often widening into caves, which contain deposits of gravel and mud, evidently brought there by water, covered by a layer of stalagmite. † The contents of

* *Egypt under the Pharaohs*, Vol. I., pp. 71, 72.

† Water in percolating through the rocks dissolves and carries with it more or less of the lime in them; this falling on the floor of a cave, in time, forms a hard and crystallized incrustation over it, and this is called *Stalagmite*; that formed on the roof of a cave is termed *Stalactite*.

many of these caves have been carefully examined by scientific men; and the results have been singularly uniform. The bones of man and the implements of his hands have been found everywhere mixed with the bones of recent and extinct animals.

In 1833, Dr. Schmerling of Liege published the results of his examination of upwards of forty caves in the basin of the River Meuse. From this work it appears that the floors of many of the caverns were of unbroken stalagmite; that in the cave-earth below this, he found remains of extinct and recent animals commingled, and with them in a few of the caves, the bones of man, including skulls, teeth, and bones of the extremities; that the human remains were of the same color, and in the same condition as to the amount of gelatine they contained, as those of the accompanying animals; that they were so rolled and scattered as to show that they were not intentionally buried on the spot; that rude flint implements of various sorts were dispersed generally through the cave-earth in all the caverns; and that in the cave of Chokier, he discovered a polished and jointed needle-shaped bone, with a hole pierced obliquely through its base. Among the animals whose bones Dr. Schmerling found in these caves were extinct species of elephant, rhinoceros, bear, tiger and hyena.

Numerous caves containing a similar mixture of human and brute remains have been discovered and examined also in England, Wales and other countries. A brief description of two or three of these with their contents will serve to convey a general idea of all.

On the southern shore of England, overhanging Torbay, is a steep limestone hill, at the foot and on the slope of which is the town of Brixham. Close to the summit of this hill, a cavernous hollow was accidentally discovered in 1857, which, in the following year, was carefully examined by an able committee appointed by the Geological Society of London. In it they found first, or uppermost, a floor of stalagmite, varying from a few inches to a foot in thickness; in this several bones were found, and among them was a fine antler of a reindeer, firmly cemented to it, but rising in bold relief from its upper surface; and a humerus of the extinct bear lying completely within it, about midway in its thickness. Under the stalagmite was a layer of cave-earth, from one to fifteen feet in thickness; in this were discovered bones of the elephant or mammoth, of the rhinoceros, cave-bear, hyena, reindeer, cave-lion, a species of horse, ox, and several rodents; but the object of greatest interest was the entire left hind leg of the cave-bear, having all the bones, even to the smallest, in their natural positions and connections. Under the cave-earth again was a bed of gravel; some bones were detected in this, but none of importance. No human bones were found, but many flint knives, chiefly from the lowest part of the cave-earth, and one of the most perfect lay at the depth of thirteen feet from the surface. The hill in which this cavern is situated is separated from all higher ground by valleys, which are at least sixty feet below the level of the cave, yet it is evident that it has once been the channel of a stream, and that all these relics were car-

ried into it by water. It is apparent, therefore, that since running water coursed through this limestone hill, the face of the country has undergone a great change.

In cutting a water-course for a paper-mill, at Wells, England, some twenty years since, a cavernous fissure choked up to the roof with ossiferous loam, was unexpectedly exposed to view. It measured nine feet in height and thirty-sixth in width. The red loam or mud with which it was almost filled abounded in fossil remains. Here were confusedly mixed the bones of elephants, rhinoceroses, bears, wolves, elks, foxes, &c. The bones of the hyena were in such numbers as to lead to the conclusion that the cavern had long been a den of these beasts. Intermixed with all the above fossil bones were various works of human hands, arrow-heads made of bone, many chipped flints, chipped pieces of chert, and a white-flint spear-head. At the distance of thirty-four feet from the entrance the cave bifurcated, one branch taking a vertical direction, and through this, it was supposed, the contents had been introduced.

Equally interesting discoveries have likewise been made on the peninsula of Gower, Glamorganshire, Wales. Here are several subterranean chambers, in which have been found the remains of almost every quadruped elsewhere found fossil in British caves. In the fissure called Raven's Cliff, teeth of hippopotami, both young and old, were found. From another fissure, called Bosco's Den, no less than one thousand antlers of the reindeer were extracted; these were mostly shed horns, and of young animals, and had been washed into

the rent with other bones, and fragments of limestone, and all enveloped in the same ochreous mud. Here also were found several well-shaped flint knives.

On the western side of the beautiful Vale of Ilsham, where it opens upon the shore of the English Channel, stands a small wooded limestone hill, containing a large cavern, which, under the name of *Kent's Hole*, has been known from time immemorial, and during nearly half a century has attracted the attention of geologists and antiquarians. In 1864, the British Association appointed a committee to explore and examine this cave, and placed at their disposal a liberal sum of money for this purpose. From the stated reports of this committee to the Association we extract the following interesting facts.*

Kent's Hole has two entrances; these are 54 feet apart, but nearly on the same level, being a little over 60 feet above the bottom of the adjacent valley. The cavern consists of two parallel divisions, each containing several chambers and galleries; the researches have mainly been carried on in the eastern division, the extreme length of which is 285 feet, greatest breadth 90 feet, and greatest height 22 feet. The deposits with their contents, as found by the committee, we now give in their descending order.

First, or uppermost, *Blocks of Limestone*, fallen from the roof, of irregular forms, and weighing from a few pounds to fifty and even a hundred tons.

Second, beneath and between these blocks, a layer of

* See *Reports of the British Association for 1865-1869.*

Black Mould varying from three to twelve inches deep. In this was found a large assemblage of artificial objects, belonging to times all the way back to the Romans, and some to ante-Roman times. Here were miscellaneous scattered human vertebræ, jaws, teeth and portions of skulls; remains of bat, badger, fox, hare, rabbit, pig, sheep, birds and fishes; terrestrial and marine shells; whet-stones and polishing-stones; spindle whorls made of different kinds of stone, some plain and others ornamented; amber beads; bone awls, chisels and combs, the last being made of the form and size of a common shoe-lifter, and having the teeth at the broad end; bronze articles, including rings, a fibula, spoon, spear-head, socketed celt, and pin; portions of cakes of smelted copper; and a great number and variety of potsherds, including Samian ware.

Third, a *Stalagmite floor*, in which were imbedded and enclosed charred wood, marine and land shells; remains of various mammals, including the extinct cave-bear, hyena, woolly rhinoceros and mammoth; and a portion of a human upper jaw containing four teeth, with a loose tooth lying near it—this jaw was near the under side of the stalagmite, where it was twenty inches thick.

Fourth, a *Black Band*, composed mainly of small pieces of charred wood, and about three or four inches thick. This was a local deposit of an irregular outline, comprehending some ten or twelve square yards, and situated about 30 feet from the entrance. In this were found a large number of flint implements; bone tools, including a well-formed awl, a fish-spear barbed on

STONE IMPLEMENTS FOUND IN THE CAVES OF EUROPE.



Flint Saw,
From France.



Flint Point, From Denmark.



Bone Needle.



Flint Hatchet,
From Denmark.



Flint Scraper,
From Perigord, France.



Flint Knife,
From Perigord, France.

one side; and a portion of a needle having a nicely made eye capable of carrying fine twine; also remains of rhinoceros, hyena, deer, horse and ox.

Fifth, *Cave-earth*, consisting of red ochreous loam mingled with fragments of limestone and rounded pebbles of grit, quartz, and slate. This bed contained a harvest of animal remains, including extinct species of the mammoth, cave-bear, etc.; recent species no longer existing in the British Isles, as the reindeer, wolf, etc.; and recent species still inhabiting those islands, such as the badger, fox, etc. The remains of the horse and rhinoceros were extremely abundant, but were probably surpassed by those of the cave-hyena, whose presence was further represented by the bones which he had gnawed as well as by his bony fæces. The bones lay together without anything like order; remnants of different species were constantly commingled, and in no instance was there met with anything approaching a complete skeleton. Mixed with them, and at all depths to which the cave-earth was excavated, indications of Man were everywhere found. They consisted of oval and pointed implements of flint, chipped into form apparently with great labor and care; stone hammer or crusher which had seen considerable service; whetstones; bone pin, and two bone harpoons, one of them barbed on both sides, the other on one side only—these three bone implements were found directly under the *black band* above mentioned: the single barbed harpoon was one foot deep in the cave-earth; that doubly barbed was two feet deep, and the bone pin was found four feet

deep, at the very bottom of the excavation, where it lay in contact with the molar tooth of a young rhinoceros.

Sixth, a *second Stalagmite floor*, sometimes more than three feet thick, and of a highly crystalline structure. This was struck in the southern part of this division of the cave. This contained quite as many bones as the first stalagmite layer, but so far as examined, they belonged to the cave-bear only.

Seventh, a *Breccia*, beneath the second stalagmite floor, composed of red loam, mixed with angular and rounded stones, and the whole cemented firmly together. This is of unknown depth. This equalled, if it did not surpass, the cave-earth in the number of bones buried in it; but there was no variety, all belonged to the cave-bear and lay in the most confused manner.

There are evidences of the action of water in this cave also. Most of the red loam and rounded stones, and probably many of the relics, were washed in, if not by a perennial stream, yet by occasional floods rising to sufficient height to flow in at the two entrances.

Such are the relics of man and beast found in Caves. But it is not in the dark recesses of underground vaults and tunnels only that such remains have been discovered; similar things have been met with in the valleys and beds and drifts of many rivers. "Throughout a large portion of Europe," says Sir Charles Lyell, "we find at moderate elevations above the present river channels, usually at a height of less than forty feet, but sometimes much higher, beds of gravel, sand and loam, containing bones of the elephant, rhinoceros, horse, ox, and other

quadrupeds, some of extinct, others of living species." With these are frequently mingled flint implements of various kinds, as in the caves. Both are sometimes found in remnants of drift beds hanging like small terraces upon the sloping sides of valleys, from ten to a hundred feet above the level of the streams that flow through them. In such situations many flint implements and animal remains have, within the past twenty-five years, been discovered in the valley of the Somme in France. Sometimes both kinds of relics are found buried deep in the bottom alluvium through which the rivers now flow; this is the case along the Thames; many bones of elephants, rhinoceroses, hippopotami, and other animals, have been found in the gravel on which London stands; they have been dug up on the site of Waterloo Place, St. James' Square, Charing Cross, Bethnal Green, and the London Docks; and in the British Museum is laid up a flint weapon of the spear-head form, which was found with an elephant's tooth, near Gray's Inn Lane, in the heart of the city. Similar discoveries have been made in the valley of the Ouse and several other streams.

Now in regard to these relics, whether found in caves or valley drifts and deposits, it is necessary to observe that the fact that the implements or bones of man lie together, or in the same situation as the remains of extinct animals, is not always to be regarded a proof that man and such animals must have been contemporaneous. They may have lived in ages far distant, and died in localities widely separated, and yet their remains through

various agencies may have been brought together and buried in the same spot; rains and floods may have effected this along the valleys; and the tools and bones of man may have been washed into caverns where the bones of animals had rested long before him, and been whirled into intimate conjunction by the eddies of subterranean currents. "That such intermixtures have really taken place in some caverns," says Lyell, "and that geologists have occasionally been deceived, and have assigned to one and the same period fossils which had really been introduced at successive times, will readily be conceded."

There is sufficient evidence, however, that this has not always been the case—there are instances that clearly indicate that they were coeval. In the Brixham cave, the reader will remember, close to a very perfect flint tool, there was found the entire hind leg of a cave-bear, every bone in its natural place, clearly proving that it must have been introduced clothed with its muscles. Had the flint tool been subsequently buried close to it by the eddies of a subterranean current, these bones would have been washed asunder and scattered. A hind limb of an extinct rhinoceros was found under the same circumstances in gravel containing flint implements, at Menchecourt, France. Again, in Kent's Hole, the detection of the human jaw at the *base* of the first stalagmite layer, and of the remains of extinct mammals at the *upper surface*; and also the presence of the bone implements with extinct animals *clear below* this impervious stalagmite floor, render it impossible to doubt that

man was the contemporary of the mammoth and his compeers.—With these and other evidences, therefore, before us, we regard it as an established fact that some of the extinct mammalia were coeval with man.

From this fact, namely, the finding of human bones and tools in such connection with the remains of extinct animals as to prove them contemporaneous, two arguments have been derived respecting the antiquity of man; one grounded on the present elevated situation of the caves and drifts where these relics have been found, the other on the great length of time supposed to have elapsed since these animals became extinct. These two trains of reasoning, it has been asserted, prove that Man has been an inhabitant of the earth for a vastly longer period than what the Bible history represents. It is important, therefore, that we examine these arguments.

First, then, that based on the situation of the caves and terraces where these commingled remains of man and beasts have been discovered: it runs thus—These bones and implements were for the most part deposited in the caves and terraces by water, that is, by the streams now flowing so many scores or hundreds of feet below them, but *then* above, or at their level; these streams have since gradually worn and scooped out these valleys through the rocky strata to their present width and depth; but to effect this enormous amount of erosion, at the slow rate we see them working, must have occupied many tens of thousands of years; therefore, those bones and implements of man must be so many tens of thousands of years old.—Such is the argument, and such

the conclusion to which it seeks to bring us. Let us look at it; of what do we find its several links composed? Simply of so many assumptions, which have not been and never can be proved.

It is a mere assumption that the water that flowed through these caverns was supplied by the streams now so far below them. There is no evidence that these caverns ever were such *permanent* water-courses; the loam and bones and tools they contain might have been washed into them at intervals in times of heavy rains through *fissures* from above, of which these limestone districts are full; in many cases they are seen to have been in communication with the surface by such apertures, but which are now choked up; and the rains might have flowed in even through their present entrances which open on the hill-sides, for the outward conformation of the ground might have been very different once from what they are now,—in the course of hundreds or thousands of years masses of rock may have fallen and masses of earth may have crumbled down, so as to entirely change the configuration of the surface about them.

Sir Charles Lyell, after a careful examination of these caves and valleys, came to the conclusion that the human relics mixed with those of extinct animals were probably not coeval. “The caverns having been at one period the dens of wild beasts, and having served at other times as places of human habitation, worship, sepulture, concealment, or defence, one might easily conceive that the bones of man and those of animals which

were strewed over the floors of subterranean cavities, or which had fallen into tortuous rents connecting them with the surface, might, when swept away by floods, be mingled in one promiscuous heap in the same ossiferous mud or breccia." * And Dr. Schmerling, an enthusiastic advocate of man's great antiquity, makes the admission, "that most of the materials, organic and inorganic, now filling the caverns, have been washed into them through narrow, vertical, or oblique fissures, the upper extremities of which are choked up with soil and gravel."

Again: It is an assumption only that these valleys are the work of the streams that now flow through them. These long and broad fractures in the crust of the earth might have been mainly formed long ages before by subterranean convulsions, and as the country after the Glacial period was elevated from the bosom of the ocean, they might have come up filled with sand or alluvium, which was afterward readily and rapidly carried away by these streams, and thus cleared out into open valleys much such as we now behold them.

Once more: It is but an assumption, and a groundless one, that the present rate of wear and tear effected by these streams always has been their rate of working, and therefore offers a basis for estimating the length of time it has taken to excavate the valleys to their existing dimensions. As a region or country is cleared of the primitive forest and brought under cultivation, its rivers and brooks are invariably reduced in volume; of this

* *Principles of Geology*, 9th Ed., p. 740.

a thousand proofs may be found in the United States. The time, therefore, may have been, doubtless has been, when the streams under consideration were much larger than at present, and subject to more frequent and violent floods, and so tore and carried away the earth at a much faster rate than they do in our day.—This whole argument, therefore, derived from the present elevated situations of the caves and terraces where traces of man have been found, proves nothing as to the time when they were deposited there. For aught that can be shown to the contrary, all the fluvial action that has taken place either in the caves or the valleys might have been effected within the period of historic time.

Present rates of change either in the animal or physical world may be no examples, no parallels, of rates that obtained in ages past. And yet, the imposing calculations put forth to prove the extreme antiquity of Man deduced from the elevation of Scotland and Scandinavia and Sardinia, from the erosion of rocks and the deposit of alluvium, from the growth of peat, from the accumulation of Deltas in lakes and in the sea, and from the range and extinction of animal species—are all based upon *present rates* of change; based upon the sheer assumption that the agencies which effect changes in the present period never worked at a more rapid or powerful rate in any period of the past. No more erroneous or absurd would it be to take the action of one particular river as the measure of the action of all the rivers of the globe, than to take the rate of change in one age, as the rate for all ages of time. Every geologist knows that the

activity of the elements of change was enormously developed in past ages, and in a way that mere lapse of time will not suffice to explain. Take, for example, the action of Frost: the greatest part of New England, and the greatest part of Old England, too, are strewn with the remains of the Northern Drift—an evidence of ice action on a scale immensely greater than any now witnessed in those parts of the world. How or by what means that terrible glacial period was brought on, we know not; but this we do know, that the rate of erosion by present glaciers is no test whatever of the changes and desolations produced by their vast development in times that are past. Take again the action and power of water in by-gone ages: Humboldt tells us of traces of such action on the banks of the Orinoco 160 and 190 feet above the present level of the river, and adds that “these traces prove, what indeed we learn from all the river beds of Europe, that those streams which still excite our admiration by their magnitude, are but inconsiderable remains of the immense masses of water belonging to a former age.” And Sir Charles Lyell, speaking of the alterations in the valley of the Rhine, says, “It is more than probable that the rate of change was once far more active than it is now.” If ice action and water action were so much more powerful, why not also gas and steam action, why not subterranean and atmospheric action of many kinds? Calculations in regard to the antiquity of the human race, therefore, based upon present rates of change, are utterly uncertain and worthless; and until those who indulge in them shall have

demonstrated that frosts and floods were never greater, storms never more frequent or violent, subterranean fires never more intense, waste and destruction never more extensive, elevation and subsidence never more rapid, erosion and deposition never more active, than at the present time—until this be demonstrated, we say, which it is not likely soon to be, no man on this ground need be alarmed for the authority of his Bible, or suffer his faith to be shaken in the history it gives of the origin, growth, and dispersion of our race.

Let us now glance at the second argument urged in connection with the Cave bones and implements in proof of the great antiquity of man, which, briefly expressed, runs as follows: Man was the contemporary of many species of carnivorous and herbivorous animals now unknown in the world; the discovered fossils of these prove that they were introduced upon the earth at a very remote period; after their introduction they went on multiplying and flourishing through many long ages, then through about as many ages gradually declined, growing more and more scarce until, finally, they became extinct; and their extinction even took place before the era of the Danish Peat and Swiss Lake-dwellings: now as species fade and pass away so slowly that the whole of historic time has sufficed to produce scarcely a perceptible change in those now living, this entire cycle of extinct animal existence must have occupied many tens of thousands of years; therefore the relics of Man found commingled with their remains must be as many, or at least nearly as many tens of thousands of years old.

Here again we have a chain of mere suppositions. The era of the Danish Peat is an imaginary era; there is no fact nor class of facts known by which anything like a definite date can be assigned to it. That these animals became extinct before that era (whatever it was) is nothing more or better than a conjecture. That time was the chief element of their destruction, or that they dwindled in numbers and became extinct slowly in the process of long ages, is likewise a mere assumption; changes in the condition of the atmosphere, or in the elevation of the land, or in the climate and seasons, might have rapidly diminished their numbers, and in a comparatively short period wiped them all away. Such changes we know have taken place, and have been followed by such results. Geology reveals past periods of vast destruction of animal life both on land and in the sea, the causes of which we cannot even conjecture. There is nothing going on at present in the domains of the elephant and the reindeer which could accumulate the masses of elephant bones and tusks that are found in the frozen cliffs of Siberia, or the hundreds of antlers of reindeer that were taken out of only *one* of the Gower caves. These relics attest the power of past destroying agencies, and the vast aggregate of life extinguished. A change in the direction of the Gulf Stream, which is supposed to have taken place by the giving way of a rocky barrier among the West India Islands, might have produced a rapid alteration in the climate of Europe; and we may, with better reason, refer the extinction of these great mammalia to such alterations, than to the

mere lapse of time. We can scarcely estimate the rapid destruction which would ensue, if perennial vegetation gave place to the leafless trees and barren soil of a northern winter. Again: that the era of these extinct animals and the era of Man, as the argument intimates, were *synchronous*, is not exactly true; all that known facts prove is, that the close of the former era overlapped the beginning of the latter era; that is, some of these animals remained and continued their existence for a considerable period after Man was brought upon the scene. The latter generations of the mammoth, cave-bear, etc., were contemporary with the earlier generations of the human race; and hence the juxtaposition in which some of their remains are found.

Now, from *this* what is the legitimate inference? Not that the human race is more ancient, but that these extinct mammals were more recent, than we have been wont to suppose. We have been accustomed to regard these animals as belonging to the immeasurably distant cycles of geology, whereas, as these late discoveries show, they lived in much later times. It is in this light that some of our ablest archæologists now regard this subject. The able and candid Prestwich, of whom Sir Charles Lyell avers that the authority of no man living is of greater weight in this matter, says, "The evidence from the occurrence of human relics with the bones of extinct animals, as it at present stands, does not seem to me to necessitate the carrying of man back in time past, so much as the bringing forward the extinct animals toward our own times."

Various evidences can be adduced to show that the hairy mammoth, the cave-bear, cave-lion, woolly rhinoceros, etc., have not been extinct as long as has commonly been represented. The men of a no very remote period have left behind them clear proof that they were acquainted with these quadrupeds. In connection with their fossil bones there have been found in several caves of France *graven pictures* of several of them, in which the forms are so lifelike, and the attitude in very action so thoroughly caught, that one is convinced at a glance, that their ancient authors must have seen and been familiar with them in real life. Of these pictorial sketches of ancient artists some fifty specimens were exhibited at the International Exposition, in 1867. These have been carefully described by M. Gabriel de Mortillet. One of them, perhaps the earliest, was found in the upper cave at Massat; it is a tolerably correct likeness of the great Cave-bear, drawn on a stone. Another is an outline sketch of the Mammoth, drawn on a slab of ivory, from the cave of La Madeleine; when MM. Lartet and Christy found this, it was broken into five pieces, which they managed to put together very accurately. The small eye and curved tusks of the animal may be perfectly distinguished, as well as its huge trunk, and even its abundant mane. A third figure is that of an entire Mammoth, graven on a fragment of reindeer horn, from the rock-shelters of Bruniquel. This figure forms the hilt of a poniard, the blade of which springs from the front part of the animal. It is seen at once to be the Mammoth by its trunk, its



Hairy Mammoth engraved on a piece of elephant's ivory, found in the Madelaine Cave, France.

wide flat feet, and especially by its erect tail, ending in a bunch of hair:—the living species of elephant never sets up the tail, and has no bunch of hair at the end of it. This whole figure agrees remarkably well with the restoration of this animal published by the Russian naturalist Brandt, and leaves no doubt that the cave artist was personally acquainted with the beast. A fourth representation is that of the Cave-lion on a fragment of a staff of authority, carved with great clearness; the head, in particular, is perfectly represented. This also was found at Bruniquel. Two ivory daggers were discovered at the same place; these are very artistically executed, and are the most finished specimens that have been found up to the present time. Both of them represent a reindeer with the head drawn back; but whilst in one dagger the blade springs from the hinder part of the body, in the same way as in the rough-hewn horn, in the other it proceeds from the front of the body, between the head and the fore-legs. The hind-legs are stretched out and meet again at the feet, thus forming a hole between them, which was probably used as a ring on which to suspend the dagger. At Laugerie-Basse a slab of slate was found, on which is drawn in outline a reindeer fight; it is one of those furious contests in which the males engage during the rutting season; and the artist has executed his design in a spirited manner. Sketches of the ox and the bison have also been met with in various styles. “In a cave, in the Department of Ariège, which M. Lartet ascribes to the period of the aurochs, a quadruped which survived the reindeer in

the south of France, there are bone instruments of a still more advanced state of the arts, as, for example, barbed arrows, with a small canal in each, believed to have served for the insertion of poison; also a needle of bird's bone, finely shaped, with an eye or perforation at one end, and a stag's horn, on which is carved a representation of a bear's head, and a hole at one end as if for suspending it. In this figure we see, says M. Lartet, what may perhaps be the earliest known example of lines used to express shading."

Now, these remarkable sketches and carvings, said to have been executed in the so-called Stone Age, prove to us plainly two things,—First, that the men of that early period were not the rude and ignorant "animals," that a certain class of writers are fond of representing them, for they evince very decided artistic taste, and display admirable skill in the execution of their works: and they prove, secondly, that in the time of these ancient artists the Mammoth, the Cave-bear, the Cave-lion, etc., were living and familiar objects, and therefore have not been extinct for the unnumbered ages claimed by those who thereby seek to exaggerate the antiquity of the human race.

Another class of evidences which go to show that these large mammals survived till comparatively recent times are found in their well-preserved remains in the frozen regions of Siberia. Of these we have the following interesting examples in Sir Charles Lyell's great work, *The Principles of Geology*.—"In 1772, Pallas obtained from Wiljuiskoi, in latitude 64°, from the banks of the

Wiljui, a tributary of the Lena, the carcass of a Rhinoceros, taken from the frozen sand. This carcass, which was compared to a natural mummy, emitted an odor like putrid flesh, part of the skin being still covered with short crisp wool, and with black and gray hairs." Professor Brandt, of St. Petersburg, adds the following particulars respecting this wonderful relic:—"I have been so fortunate as to extract from cavities in the molar teeth of the Wiljui rhinoceros a small quantity of its half-chewed food, among which fragments of pine-leaves, one-half of the seed of a polygonaceous plant, and very minute portions of wood with porous cells, were still recognizable. It was also remarkable, on a close investigation of the head, that the blood-vessels discovered in the interior of the mass appeared filled, even to the capillary vessels, with a brown mass (coagulated blood), which in many places still showed the red color of the blood."

"Thirty years after the above discovery, the entire carcass of a mammoth was found by a Mr. Adams farther north. It fell from a mass of ice, in which it had been encased, in latitude 70°; and so perfectly had the soft parts of this carcass been preserved, that the flesh, as it lay, was devoured by wolves and bears. The skeleton is still in the museum of St. Petersburg, the head retaining its integument and many of the ligaments entire. The skin of the animal was covered, first, with black bristles, thicker than horse-hair, from twelve to sixteen inches in length; secondly, with hair of a reddish brown color, about four inches long; and thirdly, with wool

of the same color as the hair, about an inch in length. Of the fur, upwards of thirty pounds' weight were gathered from the wet sandbank. The individual was nine feet high, and sixteen feet long, without reckoning the large curved tusks: a size rarely surpassed by the largest living male elephants."

Similar discoveries were made in 1843 by Middendorf, a Russian naturalist, in the same region. "One elephant he found on the Tas, near the Arctic Circle, with some parts of the flesh in so perfect a state that the ball of the eye is now preserved in the museum at Moscow. Another carcass, together with a young individual of the same species, was met with in the same year, in latitude 75°, with the flesh decayed. It was imbedded in strata of clay and sand, with erratic blocks, fifteen feet above the level of the sea."

"So fresh is the ivory of these perished animals throughout Northern Russia, that according to Tilesius, thousands of fossil tusks have been collected, and used in turning; yet others are still collected and sold in great plenty. He declares his belief that the bones still left in that country must greatly exceed in number those of all the elephants now living on the globe."

"Remains of the mammoth have been gathered from the cliffs of frozen mud and from the ice on the east side of Behring's Straits, in Russian America. As the cliffs waste away by the thawing of the ice, tusks and bones fall out, and a strong odor of animal matter is exhaled from the mud."

"In 1866, in the flat country near the mouths of the

Yenesei, between latitudes 70° and 75° north, many skeletons of mammoths were found retaining the skin and hair. The heads of most of them are said to have been turned toward the south. So late as 1869-70, an exploring expedition was made by Her von Maydell, under the direction of the Academy of St. Petersburg, to the river Indigiska, to examine some remains said to have been discovered there. The travellers found the skin and hair as well as the bones of the elephant (*Elephas primigenius*) at two points on the river, about thirty miles distant from each other, and sixty miles from the Arctic Sea."

In view of such strange facts, it is natural to ask, How subsisted these great animals in these barren and severe northern latitudes? Or whence came they there? To these questions no answer that is entirely satisfactory perhaps can be returned at present. According to Murchison, a constant elevation of this whole arctic region has been slowly going on, and as a consequence a constant extension of the land toward the north; now both these, according to well-known principles, have a tendency to increase the severity of the winters. It is probable, therefore, that the climate in former ages may not have been as rigorous as it is found at present. "It has also been suggested that, as in our own times, the northern animals migrate, so the Siberian elephant and rhinoceros may have wandered towards the north in summer. The musk oxen annually desert their winter quarters in the south, and cross the sea upon the ice, to graze from May to September, on the rich pasturage



PRIMEVAL MAN'S CONTEMPORARIES.

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of Melville Island, in latitude 75°. The mainmoth may in like manner have made excursions, during the warmth of a northern summer, from the central or temperate parts of Asia to the regions where their remains are now found. And it might often have happened that numbers of these animals, while grazing in narrow valleys or at the base of cliffs along the rivers, were overtaken by sudden snow storms and buried beneath huge drifts, where their bodies in time would be enclosed in solid ice, and then with the swelling floods of returning summer be floated down as in icebergs towards the northern sea. "Or, a herd of mammoths returning from their summer pastures in the north, may have been surprised, while crossing some broad stream, by the sudden congelation of the waters. M. Huc, in his *Travels through Tibet*, in 1846, relates, that, after many of his party had been frozen to death, the survivors pitched their tents on the banks of Mouroni-Ousson, and saw from their encampment some black shapeless objects ranged in file across the stream. As they advanced nearer, no change either in form or distinctness was apparent; nor was it till they were quite close, that they recognized in them a troop of the wild oxen, called Yak by the Tibetans. There were more than fifty of them encrusted in the ice. No doubt they had tried to swim across at the moment of congelation, and had been unable to disengage themselves. Their beautiful heads, surmounted by huge horns, were still above the surface, but their bodies were held fast in the ice, which was so transparent that the position of the imprudent beasts

was easily distinguishable; they looked as if still swimming, but the eagles and ravens had pecked out their eyes."*

From the study of a variety of natural facts, geologists have been led to the conclusion, that at the early period when the stone implements of England and France were in use, these countries were undivided by sea, and the climate in them was much colder than at present, as cold, in fact, as that which now prevails some ten or fifteen degrees farther toward the north, or in the latitude of the localities in which some of the Siberian carcasses have been discovered. Under these circumstances, therefore, the hair-clad mammoth and rhinoceros would find a congenial home at that period in the valleys of the Thames, the Somme and the Seine, where their remains and the stone hammers and flint knives are now found lying together.

Let us now return to our argument, viz., that urged in proof of the vast antiquity of Man from the length of time which must have elapsed since the extinction of the mammoth, the rhinoceros, cave-bear, etc., whose bones are found in caves and drifts commingled with the tools and relics of Man. Let the reader now contemplate the pictures and images of these animals left in the cave-dwellings of man,—their artistic style, their life-like forms, their expressive attitudes, and not omitting even their hair-line shadings; let him consider the freshness of the ivory tusks which abound along the streams of

* The above extracts are from *The Principles of Geology*, Chap. X.

Siberia; let him stand over the mammoth and rhinoceros carcasses still wrapped in their shaggy hides; let him look at living wolves and foxes greedily devouring them; let him smell their flesh and handle their long and woolly hair; let him place his finger on the eyeball still in its socket, and trace the veins still holding in coagulated form the blood that was wont to course along them, and examine the half-chewed pine-leaves still remaining in the cavities of their teeth—let the reader do all this, we say, not forgetting even that they have been frozen, and let him judge for himself if the extinction of these great quadrupeds will carry him back to any very high antiquity, or if he must travel into the past to the distance of from *ten to twenty thousand years*, as is claimed, before he can see them browse and breed and roam among the living inhabitants of the earth. And yet this is one of the arguments put forth, under the name of Science, to overthrow the history and chronology of the Bible! Well might a recent writer in the *Anthropological Review* have said,—“It may almost be asserted that every scientific opinion is speculative. It may be safely said that there is no opinion current among scientific men,—not even of those opinions whose claim to the title ‘principle’ appears most unquestionable,—that is not essentially *provisional*, liable to modification or even revolution under the pressure of increased knowledge.”*

The argument for the great antiquity of man, based

* No. 24, p. 19.

on the coincidence of his relics with those of extinct animals amounts to simply nothing—since many species of animals whose first introduction dates *much further back* in geological time are at *present* contemporaneous with man. Add to this, that “it is every whit as natural and as logical to infer the *relative recency* of these now extinct animals because the works of man are found with them, as it is to infer the *antiquity of man* from the assumed greater age of these animals. Their coincidence proves nothing as to remoteness of time in man’s history.”*

What though man was the contemporary of the mammoth, cave-bear, cave-lion, woolly rhinoceros, etc., so were many other of the present living species of animals their contemporaries also; and what though these great quadrupeds have become extinct after the advent of man, so have several other animals since their time become extinct. The history of the globe from the dawn of organized existence has been the history of a succession of animal creations and extinctions. It is the general doom of every species as well as of every individual to die at some time, and dying is not the work of thousands, or even of hundreds of years: it is an event that takes place in a day. The hairy mammoth and his compeers had their dying day prior perhaps to the time of written history, and other species we know have been brought to their dying day within the period of history. The Bear died out in the British Isles in the eleventh

* *Blending Lights*, p. 220.

century of the Christian era; the Irish Elk, whose antlers stood ten feet and a half above the ground, in the beginning of the fourteenth century; the Reindeer of Denmark toward the close of the fifteenth century; the Urus, first mentioned by Julius Cæsar, in the sixteenth century; the Moa of New Zealand and the Epiornis of Madagascar within the epoch of the traditions of those Islands; the Dodo and some other birds of Mauritius in the seventeenth century; the Solitaire of the island of Rodrigues disappeared somewhat later; and the last seen of the great Auk of the Arctic Regions was in 1844. Other species still are fast approaching the day of their extinction. "The Kangaroo and the Emu," says Lyell, "are retreating rapidly before the progress of colonization in Australia, and it scarcely admits of a doubt that the general cultivation of that country must lead to the extirpation of both." The Beaver and Moose and Buffalo of North America are being crowded in a similar manner from their ancient ranges, and appear to be inevitably doomed to the same fate at no distant period. Of the Aurochs, that once ranged over a large portion of Europe, but few remain, and even this remnant survives simply because protected by the Russian Czars in the forest of Lithuania.—With facts such as these before us, we see that the extinction of the mammoth and cave-animals is but one of many similar events that have taken place within the human period, and that it does not necessarily imply the very high antiquity which some have claimed for it, in their eager desire to carry back the origin of our race to a dateless past.

Many of the discoveries of archæology have been unlooked for, and, indeed, quite surprising, but none of them can be shown to be irreconcilable with the testimony of Scripture. Nothing that has been observed in the Peat-beds or Shell-mounds of Denmark; no relic dredged from the Lake-dwellings of Switzerland or exhumed from the alluvium of the Mississippi or the Nile; no fossil or implement brought to light from the caves of Belgium or Britain, from the basin of London, or the gravel-pits of Amiens, or the sepulchres of Aurignac—furnish anything worthy of the name of *proof*, that we are one step further removed in time from the infancy of our race than the Sacred History indicates. The chronology of the Bible spans an epoch that is abundantly broad to comprehend all vestiges yet discovered that either belong or refer to Man as a tenant of the earth. This is the testimony of the most cautious and trustworthy geologists. "I find no traces of Man," says Dr. F. Pfaff, "with any certainty, further back than the great climatic changes of the Quaternary Period, the most reliable of which do not reach back more than 5000 to 7000 years from the present time,"—dates both of which are amply covered by the chronology of the Greek Scriptures, which places the Deluge 5120 years, and the creation of Man 7382 years from the present writing.

As with many discoveries in other fields of natural science, so with some of the developments of archæology, an attempt has been made to undermine the faith of men in the Sacred Record. A few disconnected and

imperfectly understood facts have been hastily construed and arrogantly held up by sceptics as evidences against the truth of the Bible history; and with haste as unscientific as undevout these have rushed exultant to the conclusion that the fate of Christianity is decided! But as has happened to others, so it happens to these now—they meet with their just rebuke in the more comprehensive and correct views reached by patient and prolonged investigation. “Now,” says Professor Christlieb of Bonn University, “sober investigations are, on the ground of careful observation, beating a retreat, and instead of the favorite million of years formerly held up to the astonished public, are computing much more moderate periods. The age of the mammoth, the cave-bear and the reindeer, which scientists, especially Frenchmen, have been trying to separate by thousands of years, are now by thorough investigators, like Fraas, placed quite close together. And the lake dwellings too; how has their origin been relegated to immemorable antiquity in order to throw discredit on the Biblical account of man. And now scientists are beginning to abandon the idea of the stone, bronze, and iron ages being successive epochs; so that we may confidently assert that some of these remains extend back no more than a few centuries beyond Cæsar, and hence are not even older than historical times. And so, after all, the 6000 years of the Bible are not so utterly insufficient to accommodate all the remains of ancient civilization. But in what hot haste were scientists, at the time, to spread these

now exploded notions in all kinds of popular publications."*

Let the Christian not miss the lesson which experience thus proffers him;—that if some unexpected development, or startling discovery, or crude hypothesis of science, seem for the moment to oppose the plain statements of Scripture, he can afford to wait patiently for the clearer light that is sure to come, in the calm assurance that the foundation of God—the Word which he hath given to men—standeth sure; and, that while he may be pained to witness a man of unsanctified talent here or there disposed in the very presence-chamber of the Most High to turn his back upon the throne, let him remember that “the older and honored chiefs in natural science,” now, as ever, avow that in pursuing their studies of Nature, whether among the vestiges of the past or the operations of the present, they still feel themselves treading

“Upon the great world’s altar stairs,
That slope through darkness up to God.”

* Paper read before the *Evangelical Alliance*, at New York, in 1873.



NATURAL HISTORY

AND

THE DELUGE OF NOAH.

These ancient traditions of the Flood, which we find dispersed over the whole surface of the globe, like the relics of a vast shipwreck, are highly interesting in the philosophical study of our own species.—HUMBOLDT.

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THE CHARACTER OF THE ANTE-DILUVIANS: 1. MORAL ASPECT OF THE DELUGE; 2. PHYSICAL NATURE OF THE DELUGE; 3. EXTENT OF THE DELUGE; 4. HOW THE DELUGE WAS PRODUCED; 5. WHERE THE ARK RESTED.


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NATURAL HISTORY

AND

THE DELUGE OF NOAH.

HE first Man, Adam, as he came out of his Maker's hands, was an innocent, holy, and happy being; was, after his kind, a perfect creature physically, mentally, and morally. Sense, intellect, affections and conscience were in perfect harmony with one another, and with the Divine Will. His was a perfectly sound mind in a perfectly sound body. In all the varied exercises of his faculties, in all the emotions of his heart, in all his converse and activity, there was a complete and faultless conformity to the mind and law of God. And his love to that blessed and glorious BEING, while it was the governing principle of his whole conduct, was also to him a perennial source of the most pure and sublime happiness. In the image of God, and in his own likeness, was man created.

The primogenitor of the human race, however, did not long continue in this happy and honorable state.

Though placed in "a garden of delights," surrounded with everything that was delicious to the taste, and pleasant to the eye, yet, in an evil hour, he yielded to temptation, and put forth his hand to pluck and eat the fruit of the forbidden tree. And dismal and disastrous, indeed, were the immediate consequences of this transgression. His whole relation and intercourse with his Creator were instantly changed. He was bereaved of the sweet presence and favor of God—dreadful light broke in upon his soul, revealing his guilt and misery—the Divine voice, before transporting music, became a terror—a sense of alienation, distrust, and fear invaded his whole being—and a dreadful proneness to evil carried him continually contrary to the dictates of both reason and conscience. He had become a fallen and sinful creature.

The direful effects of that one transgression did not terminate with Adam himself; *he begat his children in his own likeness*—in his own fallen, sinful, and mortal likeness. And thus by the fall of one all became sinners. The contagion of sin affected all his posterity. Iniquity and crime spread and multiplied among them as they spread and multiplied. Nay, the stream of corruption flowed on with increased speed and violence as increased the human family on the earth. Though the descriptions given us of the earlier generations of our race are brief and general, yet they present to us a most dreadful and revolting picture of the state of depravity and wickedness to which they came at a comparatively early date in their History. This is the Divine record:—

And God looked upon the earth, and behold it was corrupt, for all flesh had corrupted their way upon the earth: God saw that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was only evil continually: The earth was corrupt before God, and the earth was filled with violence: and it repented the Lord that he had made man on the earth, and it grieved Him at his heart.

A more comprehensive summary of the greatness and extent of human wickedness it is scarcely possible to conceive than this. The mind is left where it must fill up the outline of this horrid picture with everything that is degrading to the human character; with everything that is profligate and abominable in manners; with everything that is base, false, deceitful, licentious, and profane; and with everything that is horrible and destructive in war, and ruinous to the interests and happiness of the human family. Let us glance at the several particulars included in this record.

The language employed is most intensive in its character. 1. *God saw*,—observed a condition of things among men demanding his special attention. 2. *All flesh*;—impiety and wickedness had become universal; it was not merely the majority of mankind that had become corrupt, and given unbounded scope to their passions and licentious desires, while smaller societies were still found fearing God and keeping his commandments, but all, *all flesh* had corrupted their ways. 3. *Every imagination of the thoughts of man's heart was only evil continually*;—every invention, and every pur-

pose and scheme devised both by individuals and communities, were of a malevolent nature; the spectacles of misery and horror which the universal prevalence of such principles and practices produced must have been beyond the power of imagination to describe or conceive.

4. *The earth was filled with violence*;—violence was the order of the day; there was no safety for life or property, for reputation, rights, or chastity. From this declaration we are necessarily led to conceive a scene in which universal anarchy and disorder, devastation and wretchedness, everywhere prevailed; the strong and powerful forcibly seizing upon the wealth and possessions of the weak, violating the persons of the female sex, oppressing the poor, the widow and the fatherless, overturning the established order of families and societies, plundering cities, demolishing habitations, desolating fields and vineyards, and carrying bloodshed and devastation through every land; exhibiting everywhere a scene in which cruelty, injustice, and outrages of every kind, revelry, riot and debauchery of every description, triumphed over every principle of decency and virtue. 5. *And it repented the Lord that he had made man upon the earth, and it grieved him at his heart*,—a figurative, but a most affecting expression, of God's disapprobation and abhorrence of human conduct; words that set forth, with an energy and impressiveness which probably nothing purely literal could have conveyed, the exceeding sinfulness and provoking nature of man's character. The race had reached a pitch of iniquity that rendered correction or reformation alike utterly hopeless. The infection of sin was passed all remedy.

Such was the condition of the world towards the middle of the age of Noah, and such was the character of human society that drew from the lips of the Almighty this awful threatening against the whole earth: "And the Lord said, I will destroy man whom I have created from the face of the earth; both man, and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them. Behold I, even I, do bring a flood of waters upon the earth, to destroy all flesh, wherein is the breath of life, from under heaven; and everything that is in the earth shall die. But Noah found grace in the eyes of the Lord." To this threatening God proved fearfully true, and executed it with unmitigated severity upon the whole human family, and upon everything that breathed upon the earth, save Noah and his household, together with the animals he was directed to take with him into the ark to preserve them alive, in order to restock the world. "In the six hundredth year of Noah's life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up, and the windows of heaven were opened. And the waters prevailed exceedingly upon the earth; and all the high hills, that were under the whole heaven, were covered. Fifteen cubits upward did the waters prevail; and the mountains were covered. And all flesh died that moved upon the earth, both of fowl, and of cattle, and of beast, and of every creeping thing that creepeth upon the earth, and every man: all in whose nostrils was the breath of life, of all that was in the dry land, died.

Noah only remained alive, and they that were with him in the ark."

Such is the Scripture account of the most terrible catastrophe that has befallen our world since it has been inhabited by man—an event so appalling that it so strongly impressed itself on the mind of the race that it has never been forgotten, but has lived and floated down through the ages, in one form or another, in the traditions of all the branches of the human family. The mythologies and histories of all the ancient nations are full of the remembrances of it. It is described in the stories of the Greeks and sung in the verses of the Latins. Its memory is enshrined in the sacred books of the Parsee, the Brahmin, and the Mahomedan, and has been assigned a place in the Legend of the Scandinavian and in the mythic records of the Chinaman. Its symbols are found stamped on the coins of ancient Greece, may be traced amid the hoary hieroglyphics of Egypt, recognized in the sculptured caves of Hindoostan, and detected even in the pictured writings of Mexico. In Cuba and Tahiti, on the banks of the Orinoco, on the pampas of Brazil, in the mountains of Peru, and in the Islands of the Pacific, the traveller has met with traces or traditions of the Flood, the Ark, and the rescue of the Favored Few. "The tradition of the Flood," says Hugh Miller, "may be properly regarded as universal, seeing there is scarcely any considerable race of man among which, in some of its forms, it is not to be found." And Humboldt speaking of this fact says,—*"These ancient*
ions of the human race, which we find dispersed

over the whole surface of the globe, like the relics of a vast shipwreck, are highly interesting in the philosophical study of our own species. How many different tongues, belonging to branches that appear totally distinct, transmit to us the same facts. The traditions concerning races that have been destroyed, and the renewal of nature, scarcely vary in reality, though every nation gives them a local coloring. In the great continents, as in the smallest islands of the Pacific Ocean, it is always on the loftiest and nearest mountain that the remains of the human race have been saved; and this event appears the more recent in proportion as the nations are uncultivated, and as the knowledge they have of their own existence has no very remote date." So long as the descendants of Noah remained together in one region, the story of the Deluge would be one and the same among all. But as they multiplied and became dispersed the account which the different tribes carried with them would unavoidably grow more or less blurred, and in time more or less distorted, as affected by the events of their own history, and by the features of their respective localities, till, though retaining the main facts, it assumed the varied forms and colorings in which we now find it among the different nations of the globe. In these wide-spread but wonderfully concurrent traditions, therefore, we have a remarkable corroboration of the sacred history; for on no other ground can we rationally or credibly account for them, than that they have had their origin in one and the same event—the Deluge of the Bible.

1. *Moral aspect of the Deluge.*—The Scripture history represents the Deluge as a *judgment inflicted by God*;—“Behold I, even I, do bring a flood of waters upon the earth.” In this particular, also, the Bible is singularly corroborated by the ancient traditions. The historic and traditionary proof of the Noachian Deluge is so clear and conclusive, that the very enemies of Scripture have been obliged to acknowledge its force. M. Boné, for example, an eminent writer and scoffer of the French school, has said, “I shall be vexed to be thought stupid enough to deny that an inundation or catastrophe has taken place in the world, or rather in the region inhabited by the antediluvians. To me this seems to be as really a fact in history as the reign of Cæsar at Rome.” But there are those who cannot receive this statement, and who choose rather to reject the whole Bible account than to believe that the all-wise and righteous Creator could have thus by one fearful swoop destroyed a whole world’s population. They maintain that whatever of Flood might have taken place, it was the result of mere natural causes, the hand of God was not in it, and the Great Father of all is not to be charged with the cruelty of thus destroying an entire race of beings. It is to be admitted, indeed, that the mind cannot but recoil with horror from the idea of such an immense mass of life and intelligence being thus in a moment swept into eternity! But human feelings and human reason are not competent to pronounce judgment on the wisdom or rectitude of a dispensation such as this. We are incapable of rightly estimating either its antecedents or its consequents.

God's thoughts are not as our thoughts, neither are his ways as our ways. The Father and Ruler of all must ever have contemplated the welfare, not of one generation only—not of that one generation alone on which a fate so awful descended—but of all the countless generations of men to the end of time. His wisdom and rectitude and love consulted, indeed, the interests of each individual, but of each individual in his connection with the great whole. Without departing from justice and without failing in kindness, even to one, God must ever have consulted the greatest good of the whole race. Mere forbearance, mere love to one man, himself only considered, might have proved the deepest injury to multitudes; mere forbearance, mere love to a single generation, itself only considered, might have proved the deepest injury to countless generations to come. We have seen that in the times immediately preceding the Deluge, the condition of the world was one of deep and widespread degeneracy. In spite of all the Divine warnings and Divine forbearance continued through a period of more than two thousand years, mankind waxed worse and worse, until they finally reached a pitch of corruption and iniquity past all hope of reformation. And if men, descending from a pure origin such as Adam was by creation, had thus degenerated, and sin had spread its ravages so wide and so far and so deep—the result must have been terrible beyond conception, if the race, *as it then had become*, had been suffered to perpetuate and propagate itself. It was, therefore, an act of *mercy* no less than of *justice* to arrest the onflow

of the pestilential deluge of corruption by a deluge of waters. Suddenly, awfully, the fountain was stopped from which the polluted stream of human life issued; and from a new source, and that comparatively pure, the future generations of men were appointed to spring forth. Dark and terrible as was the diluvial storm that swept over the face of our world, as we look back and thoughtfully gaze upon it, we behold shooting through it, ever and again, gleams of light and mercy, that constrain us to believe that all was appointed and controlled by all-comprehending wisdom, and by benevolence which cannot change nor be defeated of its end. The deluge was indeed emphatically an act of judgment—yet not of this alone, but of mercy also. In its first and prominent aspect, it was an appalling judgment; in its second and consequent bearing, it was designed to benefit the world's population to the end of time. This act of Divine judgment, like a massive and lofty column, which all mankind thereafter might see, rises up at the commencement of the second epoch of human history; and upon it is written the warning, in letters which all the world may read,—THE LORD REIGNETH, LET ALL THE PEOPLE TREMBLE; LET THE WHOLE EARTH STAND IN AWE OF HIM.

2. *Physical character of the Deluge.*—There are those who withhold faith in the Bible history of the Deluge on the ground that no visible trace or evidence of such a catastrophe has been discovered on the *face* of the earth,—the fossil shells, animals and vegetables and even the superficial drifts and deposits, that were once regarded as such evidence, being now proved to be vastly older

than the age of Noah. On this point geologists, we believe, are now agreed; still, traces of the Flood may remain, though none as yet have been detected, and they may not even be distinguishable. "The simple narrative of Moses," says Dr. Fleming, "permits me to believe that the waters *rose upon the earth by degrees and returned by degrees*; that the Flood exhibited no violent impetuosity, neither displacing the soil, nor the vegetable tribes which it supported, nor rendering the ground unfit for the cultivation of the vine. With this conviction in my mind, I am not prepared to witness *in nature* any remaining marks of the catastrophe; and I feel my respect for the authority of Revelation heightened when I see on the present surface no memorials of the event."* In this view both Sir Charles Lyell and Dr. Macculloch substantially concur. And Dr. Buckland, speaking on this subject, says, "It has been justly argued, that as the rise and fall of the waters of the Mosaic Deluge are described to have been gradual and of short duration, they would have produced comparatively little change on the surface of the country they overflowed."† Allowing that these great geologists have even carried their idea of the Flood's *tranquillity* a trifle too far, and "admitting that the scriptural account would lead us to infer that not a little of violence and tumultuous action attended that event, it does not follow that its effects could be distinguished thousands of years afterwards. Currents of water could have affected only the surface of the

* See *Edinburgh Phil. Journal*, Vol. 14, pp. 214, 215.

† *Bridgewater Treatise*, p. 19.

globe, and their effects would be similar to those now produced by rivers and floods. Yet as they would be spread over the whole surface and not so much confined as rivers to a particular channel, they would be less striking, and sooner obliterated. They would consist principally in the removal of the softer parts of the surface, and the abrasion of the harder parts. But similar processes have been going on ever since the Deluge, almost everywhere; and whether after the lapse of centuries we should be able to distinguish diluvial from alluvial action, it is impossible to say. Perhaps the traces of Noah's Flood might be all obliterated. If they are all gone, then the fact argues nothing against the scriptural account."* To the same effect is the testimony of the able Dr. King of Glasgow: "Though masses of detritus were accumulated in particular localities, and the distribution of hills and valleys were somewhat changed, who, after the lapse of very many centuries, could certainly discriminate these effects from those of preceding or subsequent agencies? If a river overflow its banks, or a lake burst its barriers, we see sad ravages committed over the adjacent region. But next year they are less visible. In a few years the action of the elements has further modified their obviousness; and when centuries shall have elapsed, how shall they be certainly recognized?"† Although no traces of the diluvial waters, therefore, should remain in any certain or discernible forms, the fact, by the showing of our

* Professor Hitchcock, *Bible Repos.*, Vol. 10, p. 334.

† *Principles of Geology Explained*, p. 67.

ablest geologists, would prove nothing against the Bible record.

On the other hand, the developments of geology do demonstrate that the occurrence of a deluge is quite possible and entirely credible. Infidels were wont to argue that all the waters of the earth were altogether insufficient to overflow the land—and, in fact, that ocean must be heaped upon ocean to do so. But this bold and seemingly decisive objection against the Mosaic Deluge, like many others, has vanished before the progress of science. It is now proved, and conceded by every intelligent man, that any region, however elevated above the level of the sea, may, by subsidence of that region, be laid beneath its waters; and that as a matter of fact, every portion of the earth's surface has once and again been the bed of the ocean. In the *cretaceous* or *chalk period*, Europe was but an archipelago, by far the larger proportion of its present area being submerged, as was also that of Asia, while the Pyrenees, the Alps, and the Himalayas did but just lift their tops above the general level of the waters. And since that period, the British Islands have been upheaved and submerged again and again; of the latter of these changes Professor Huxley gives the following graphic description—he is speaking of the geological formations exhibited on the eastern coast of England :

“At one of the most charming spots on the coast of Norfolk, Cromer, you will see the boulder clay forming a vast mass, which lies upon the chalk, and must consequently have come into existence after it. Interposed

between the chalk and the drift is a comparatively insignificant layer, containing vegetable matter. But that layer tells a wonderful history. It is full of stumps of trees standing as they grew. Fir trees are there with their cones, and hazel bushes with their nuts; there stand the stools of oak and yew trees, beeches and alders. Hence this stratum is appropriately called the 'forest bed.' It is obvious that the chalk must have been upheaved and converted into dry land, before the timber trees could grow upon it. As the bolls of some of these trees are from two to three feet in diameter, it is no less clear that the dry land thus formed remained in the same condition for long ages. And not only do the remains of stately oaks and well-grown firs testify to the duration of this condition of things, but additional evidence to the same effect is afforded by the abundant remains of elephants, rhinoceroses, hippopotami, and other great wild beasts. When you look at a collection of such remains, and bethink you that these elephantine bones did veritably carry their owners about, and these great grinders crunch, in the dark woods of which the 'forest-bed' is now the only trace, it is impossible not to feel that they are as good evidence of the lapse of time as the annual rings of the tree-stumps.

"Thus there is a writing upon the wall of cliffs at Cromer, and whoso runs may read it. It tells us, with an authority that cannot be impeached, that the ancient sea-bed of the chalk sea was raised up, and remained dry land, until it was covered with forest, stocked with the great game whose spoils have rejoiced your geologists.

How long it remained in that condition cannot be said; but 'the whirligig of time brought its revenges' in those days as in these. The dry land, with the bones and teeth of generations of long-lived elephants, hidden away among the gnarled roots and dry leaves of its ancient trees, sank gradually to the bottom of the icy sea, which covered it with huge masses of drift and boulder clay. Sea-beasts, such as the walrus, now restricted to the extreme north, paddled about where birds had twittered among the topmost twigs of the fir trees. How long this state of things endured we know not, but at length it came to an end. The upheaved glacial mud hardened into the soil of modern Norfolk. Forests grew once more, the wolf and the beaver replaced the reindeer and the elephant; and at length what we call the history of England dawned."*

Even within the periods of history vast submergences and deluges have taken place in different parts of the world. As late as 1819, there was a sudden subsidence of the ground about the delta of the Indus, and the sea flowed in by the eastern mouth of that river, as if "the fountains of the great deep had been opened," and in a few hours converted a tract of country 2000 square miles in area, into an inland sea, on the bosom of which the only visible object that remained was the top of the tower of the Fort of Sindree, which had been overwhelmed.

In short, geology has shown that deluges are a part of

* *Lay Sermons*, No. IX.

the course of nature. And this being admitted, for no one now denies it, all that the record of Moses requires us to believe is, that God, in the particular instance of Noah's Flood, employed in a very signal manner his natural and usual administration to accomplish a moral end, namely, to arrest the wickedness of mankind, and to give the Race a second trial.

3. *Extent of the Deluge.*—The Scripture history has been commonly understood to teach that the deluge was *universal*, that is, that its waters covered the entire surface of the earth, and that of all its air-breathing animals those only survived that were preserved in the ark. To this view, or interpretation of the inspired record, the recent investigations of science present several difficulties, and difficulties so grave that not a few, equally distinguished for their scientific knowledge and their devotion to the Bible, now hold that, while the deluge was universal as to mankind, it could not have been literally universal as to the globe of the earth; in other words, they hold that the deluge overwhelmed the whole region inhabited by men, and carried them all away, save Noah and his family, but that other and extended regions remained unvisited by this great catastrophe, and whatever of animal populations they might have had were left unharmed by it. Let us, then, look at the difficulties that are regarded as being opposed to the commonly received opinion of the universal submergence of the globe, and the universal destruction of its breathing animals, save those preserved in the ark.

The first difficulty is founded on the size of the ark. It is held to be demonstrable that that vessel was not of sufficient capacity to accommodate a male and a female of each of all the various species now found living on the earth, with the additional "clean animals," together with food sufficient for all for a period of twelve months and a half. This conducts us to the consideration of two things, the *dimensions* of the ark, and the *number* of animal species.

The ark, we are told, was 300 cubits in length, 50 cubits in breadth, and 30 cubits in height. Taking the length of the cubit, as determined by Mr. Greaves from the measurements of the pyramids of Egypt, to be $21\frac{88}{1000}$ inches, then the ark must have been (omitting fractions) 547 feet long, 91 feet wide, and 54 feet deep. This is very considerably larger than the largest man-of-war of the present day. The *Great Eastern*, however, is both longer and deeper, while it is but a little narrower, being 680 feet long (691 on deck), 83 feet in breadth, 58 feet in depth. In form, the ark appears to have been an oblong box, and was not, in the proper sense of the word, a ship, as it does not seem to have had either mast, or sail, or rudder, being designed simply to float upon the water.

Let us now glance at the number of species of air-breathing animals known to exist at the present time, all of which must have been in the ark, if the globe was totally submerged. These according to the most recent enumeration to which the writer has access stand as follows:

| | Species. |
|---|------------|
| Quadrupeds (four-handed animals)..... | 170 |
| Marsupialia (pouched animals)..... | 123 |
| Edentata (toothless animals)..... | 28 |
| Pachydermata (thick-skinned animals)..... | 39 |
| Terrestrial carnivora (flesh-eating animals)..... | 514 |
| Rodentia (gnawing animals)..... | 604 |
| Ruminantia (cud-chewing animals)..... | 180 |
| Birds..... | 6266 |
| Reptiles..... | 642 |
| | <hr/> 8566 |

As the animals which entered the ark went in by *pairs*, the male and his female, this number is, of course, to be doubled, which gives us 17,132 individuals.

This product again is to be augmented by the additional number of *clean* animals that were taken in. These we read went into the ark "by sevens;" that is, as some understand, by seven pairs; or as others interpret the words, by seven individuals; let us admit that it was this latter and lesser number, which would give us five extra individuals for every clean species. Now what the exact number of clean species might have been, we are not able to state positively; but we know that, according to the Mosaic test, all sheep, oxen, goats, deer, and antelopes were clean, and of these altogether there are known not less than 166 species; which, multiplied by five, give us 830 individuals, to be added to the above number, which make an aggregate of 17,962 breathing animals.

To all these must further be added at least 550,000 species, or more than *a million* individuals of insects of all sorts, which, though but diminutive beings, yet being

so numerous, would require considerable space for their suitable accommodation.

With all the above we must take into our calculation the room necessary to stow away in an accessible manner the diverse kinds of food and in sufficient amounts, for a whole year, and water for all. It would be perhaps a low estimate that, taken together, each animal would in this length of time consume four times its own bulk; ruminants doubtless would require much more, though compressed into the least possible space.

Now it is asked, if it be credible that an ark of the above dimensions was adequate to accommodate this immense number of animals, together with the amount of food necessary for their sustenance? and, if all these and the food they required had been crowded into one vessel, was it possible for eight individuals (supposing Noah's whole family to be engaged) to daily feed and water and take the necessary care of such a vast multitude of living creatures?

But the inadequate size of the ark is but one of the many difficulties believed to stand opposed to the hypothesis of a universal deluge. It is further urged against this supposition that, though the ark had been sufficiently capacious to receive all these animals with their food, they could not by their natural constitutions have lived there for a whole year, in one and the same temperature. It is said that if tropical animals, or animals from the polar regions, were to be removed to either of the temperate zones, neither of them could survive for any length of time, much less in the crowded

ark. "All land animals," says Dr. Pye Smith, "having their geographical regions, to which their constitutional natures are congenial,—many of them being unable to live in any other situation,—we cannot represent to ourselves the idea of their being brought into one small spot from the polar regions, the torrid zone, and all the other climates of Asia, Africa, Europe, and America, Australia, and the thousands of islands,—their preservation and provision, and the final disposal of them,—without bringing up the idea of miracles more stupendous than any that are recorded in Scripture."

It is argued against the universality of the deluge that, as the water in that case would have been mainly that of the briny ocean, all living things inhabiting fresh water would have been destroyed. Salt water would have speedily proved fatal to them. "The fresh-water fishes, molluscs, crustacea and zoophites," says Hugh Miller, "could be kept alive in a universal deluge only by miraculous means."

A similar objection to the complete submergence of the whole globe is derived from the vegetable creation. "Of the one hundred thousand species of known plants, few indeed," says the writer last quoted, "would survive submersion for a twelvemonth; nor would the seeds of most of the others fare better than the plants themselves. There are certain hardy seeds that in favorable circumstances maintain their vitality for ages; but such is not the general character of seeds. It is not too much to say that, without special miracle, at least three-fourths of the terrestrial vegetation of the globe would have

perished in a universal deluge that covered over the dry land for a year. Assuredly the various vegetable centres or regions—estimated by Schouw at twenty-five—bear witness to no such catastrophe. Still distinct and unbroken, as of old, either no effacing flood has passed over them, or they were shielded from its effects at an expense of miracle many times more considerable than that at which the Jews were brought out of Egypt and preserved amid the nations, or Christianity itself was ultimately established.”

Again, it is argued against a universal deluge, that there are certain classes of animals whose habitations have been confined, through all the ages of their existence, to certain fixed parts of the globe, from whence they could not have been brought to the ark, nor again restored from the ark to those parts, where they are still found, unless they had been transported to and fro by a miracle. For example, South America has a class of quadrupeds peculiar to itself—the puma, the jaguar, the tapir, the cabiai, the llama, the vicuna, the sloths, the armadillos, the opossums, and the whole tribe of sapajous;—none of these are to be found in Europe, Asia, or Africa; nor is there any evidence that they ever did live on either of these continents; South America is and always has been their exclusive home; there their respective predecessors existed at the time of the deluge, and, as their fossils are believed to prove, long, long ages before that event. The same thing is true of Australia; this vast island also has its own peculiar class of animals, and very peculiar they are;—the various

species of kangaroo, phascalomys, dasyurus, and perameles, the flying phalangers, the ornithorynchi, and ecludnæ, are animals which, when first discovered, astonished naturalists by the strangeness of their conformations and proportions, and utterly perplexed them for a time as to where in the vast system of animated beings they belonged;—this island is the exclusive abode of these animals, and, as is believed, has been from the day of their creation. New Zealand, likewise, when discovered, was found to possess fauna peculiar to itself;—its remarkable species of rats and lizards, and its various birds that are so ill provided with wings that they can only run along the ground;—and here their ancestries of the same peculiar generic characters lived and died, whose relics have remained locked up in the soils and caves through ages that cannot now be numbered. Now, it is asked, how is it possible to reconcile such facts with the supposition of a universal deluge? If these were all in the ark, as they must have been if the whole earth was submerged, they could have been brought thither, and could have been returned to their native homes, where now found, only “at an enormous expense of miracles.” To say nothing as to the way in which they were gathered into the ark, when the deluge had passed away, the sloths and armadillos, little fitted by nature for long journeys, much less for long voyages, would have to be conveyed across the Atlantic to their homes in the southern regions of America; the kangaroo and wombat to their forests and prairies in the insulated continent of Australia; and the New Zealand heavy-

flying quail and wingless wood-hen to those remote islands of the Pacific. In no way, that we can see, could this have been accomplished save by miracle.

Once more, a serious difficulty to the universal prevalence of the waters of the deluge is supposed to exist in connection with the Insect population of the globe. This will be best stated in the words of the great Scotch geologist: "How extraordinary an amount of miracle would it not require to bring them all together into any one centre, or to preserve them there! Many of them, like the myriapoda and the thysanura, have no wings, and but feeble locomotive powers; many of them, such as the ephemera and the male ants, live after they have got their wings only a few hours, or at most a few days; and there are myriads of them that can live upon but single plants that grow in very limited botanic centres. Even supposing them all brought into the ark by miracle as *eggs*, what multitudes of them would not, without the exertion of a further miracle, require to be sent back to their proper habitats as wingless grubs, or as insects restricted by nature to a few days of life! Or, supposing the eggs all left in their several localities to lie under the water for a twelvemonth amid mud and débris,—though certain of the hardier kinds might survive such treatment, by miracle alone could the preponderating majority of the class be preserved."

Such are some of the difficulties that present themselves against that *interpretation* of the Scriptures which makes the deluge universal; and it must be admitted, we think, that they are difficulties of such a nature that

miracles alone could overcome them. Here then we are brought to one of two alternatives; either we must believe that all these unrecorded miracles were actually performed; or, we must concede that the deluge was universal only in reference to mankind, and not to the entire globe of the earth. Let us consider both alternatives.

First, we look at the miraculous side. Does the sacred narrative state, or does it imply that such a vast and diversified number of miracles took place? Or, is the tenor of the language such that we are warranted by any fair and legitimate rule of interpretation to infer that they were actually performed? We are constrained to answer, No. On the contrary, miraculous power appears to have been employed sparingly. While the deluge was of God's appointment, and while his wisdom and omnipotence presided over all, yet there was no needless display or expenditure of Divine power. Whatever Noah was able to accomplish for the preservation of himself and family, he was required to do; and whatever natural agencies were adequate to effect in the accomplishment of God's purpose, they were employed for that end. God did not provide an ark, but Noah was commanded to build one. God did not by his immediate power retain the creatures within it, each in its proper place, but Noah was directed to partition the ark into rooms or "nests" for them according to their natures and necessities. God did not feed and sustain them by a miracle, but Noah was bidden to gather all kinds of food for them. God did not suspend their

physiological functions so that they could dispense with light and air, but instructed Noah to finish the ark above in an aperture, or window, extending its whole length so as to provide both. And in the production of the Flood itself we see natural elements and agencies, working according to their established laws, employed from its beginning to its close;—the rain descended, the waters issuing from their natural receptacles, their gradual subsidence, the blowing of the wind, the evaporation and drying up of the ground. We do not say that the deluge was brought about *solely* by natural causes—the hand and counsel of God undoubtedly were concerned in it—but what we desire the reader to notice is, that there was a marked *economy* observed in the exercise of miraculous power. “It is remarkable,” says Dr. Chalmers, “that God is sparing of miracles, and seems to prefer the ordinary processes of nature, if equally effectual for the accomplishment of his purposes. He might have saved Noah and his family by miracles; but he is not prodigal of these, and so he appointed that an ark should be made to bear up the living cargo which was to be kept alive on the surface of the waters; and not only so, but he respects the laws of animal physiology, as he did those of hydrostatics, in that he put them by pairs into the ark, male and female, to secure their transmission to after ages; and food was stored up to sustain them during their long confinement. In short, he dispenses with miracles when these are not requisite for the fulfilment of his ends; and he never dispenses with the ordinary means when these are fitted, and at

the same time sufficient, for the occasion." * Yet if we hold to the interpretation that makes the deluge universal, and literally submerges the entire surface of the globe, we must, as is undeniable from the above natural facts, hold also to the performance of unrecorded miracles far surpassing both in number and magnitude all those related in the Bible. But we are not shut up to so tremendous an interpretation as this. There is nothing in the sacred narrative to compel us to adopt such a view. Let us examine it.

The perusal of the Bible account of the deluge naturally enough conveys to the plain reader the impression that the whole earth was covered with water. Indeed, the terms employed are so definite and strong that he could hardly take any other meaning from it. "The waters prevailed exceedingly upon the earth; and all the high hills, that were under the whole heaven, were covered." But it is to be borne in mind that this history was not written in our language. As nations have their peculiar traits of character, so every language has its peculiar idiom and genius, and a thorough acquaintance with these is indispensable to a correct understanding and appreciation of the shades of meaning intended in the phraseologies of such a language. The Hebrew tongue, in which the diluvial catastrophe was first recorded, with its ancient and eastern phraseology, is not to be interpreted with the cold exactness that is applicable to the modern tongues of western Europe, especially in matters relating to physical nature

* *Daily Scripture Readings*, Vol. I., p. 10.

There is, as every student of Scripture knows, a large class of passages in both the Old and the New Testament, which are not to be taken, and in fact cannot be taken in their literal and full import; we mean those passages in which *universal terms* are used to signify *a part*. These will be best understood by the quotation of a few examples. In numerous places the phrase "*all the earth*" is employed, when only the land of Palestine is meant. "*All countries*," it is said, "came into Egypt to buy corn," yet it is manifest that only the surrounding countries within practical distance of Egypt are intended. Of the Hebrew nation God saith, "This day I will put the dread of thee, and the fear of thee, upon the nations that are *under the whole heaven*;" this declaration, as is evident, could have respect only to the nations of Canaan and those lying on its frontiers. "A decree went out from Cæsar Augustus that *all the world* should be taxed," by which of course nothing more than the Roman Empire could be meant, for Cæsar's power of taxation extended no further. At the day of Pentecost it is said that "there were dwelling at Jerusalem Jews, devout men, out of *every nation under heaven*;" yet in the enumeration which immediately follows of the different places from which those Jews had come, we find only a region extending from Italy to Persia, and from Egypt to the Euxine—not one-fiftieth part of the earth. And it could have been only to about a similar if not the same district that Paul referred, when he said that "the Gospel had been preached to *every creature that was under heaven*." Numerous other passages of

this *hyperbolic* character may be found in the Scriptures; it was a common mode of expression in the East; and as the sacred writers in recording a revelation to men used human language, it was proper that they should express themselves as men ordinarily did, if they wished to have their meaning understood. This figure of speech is commonly the effect of surprise, or having the mind so full of some object or event, as not to have words adequate to express their ideas.

It will be observed that the *universal terms* in the above quotations are the very same that are used to describe the Flood, and that the whole phraseology is precisely similar. Now, if it be admitted, as by all it is, that the nature of the subjects in those passages limit the import of these terms, why should not the same rule hold good in regard to their import in the history of the deluge? If the facts of *geography* respecting the locations and territories of the ancient nations are permitted to decide the latitude of meaning to be attached to the universal terms used in reference to them, why should not the indisputable facts of *natural history*, which offer manifold and insurmountable difficulties to their literal interpretation, be allowed to limit in likemanner their sense in respect to the extent of the Flood? Is it doing any more violence to the language of Scripture to say that, "the whole earth was covered with water" means only the whole earth as far as peopled by man, than to say that, "the whole world should be taxed" means only the whole world as far as ruled by the Romans? We cannot but regard the one limitation just as legiti-

mate and fair as the other. The deluge had reference to mankind, not to territory. And it is perfectly consistent with established laws of interpretation to understand Moses, though using these universal terms, as describing a judgment limited to the human race, for whose punishment *solely* it was sent. The Deluge was universal as to mankind, but limited as to the globe of the earth.

This is no new interpretation of Scripture suggested merely by the progress of human science; it was put forth by devout and learned men long before geology existed as a science, and long before naturalists had discovered and arranged their present magnificent system of zoology. This view of the sacred text was arrived at by them on purely exegetical grounds before the difficulties to a universal deluge from these sciences had dawned upon the minds of men; and the developments of the present day go to show that they were right. Out of many ready at hand, we quote the words of one or two of these authorities.

* Bishop Stillingfleet, who wrote some two hundred years ago, a divine of great talents and prodigious learning, says, "I cannot see any urgent necessity from the Scripture to assert that the flood did spread over all the surface of the earth. That *all mankind*, those in the ark excepted, were destroyed by it, is most certain, according to the Scriptures. The flood was universal as to mankind; but from thence follows no necessity at all of asserting the universality of it as to the globe of the earth, unless it be sufficiently proved that the whole

earth was peopled before the Flood, which I despair of ever seeing proved."*

The learned commentator, Matthew Poole, who flourished in the same century, delivers himself on this subject as follows: "It is not to be supposed that the entire globe of the earth was covered with water. Where was the need of overwhelming those regions in which there were no human beings? It would be highly unreasonable to suppose that mankind had so increased before the deluge, as to have penetrated to all the corners of the earth. Absurd it would be to affirm that the effects of the punishment inflicted upon men alone applied to places in which there were no men. If then we should entertain the belief that not so much as the hundredth part of the globe was overspread with water, still the deluge would be universal, because the extirpation took effect upon all the part of the world which was inhabited."†

To these we may add the views of recent writers. Dr. J. Pye Smith, after referring to scriptural instances in which *universal terms* were to be understood in a limited sense, says: "From these instances of the scriptural idiom in the application of phraseology similar to that in the narrative concerning the Flood, I humbly think that those terms do not oblige us to understand a literal universality; so that we are exonerated from some otherwise insuperable difficulties in Natural History and Geology. If so much of the earth was overflowed as was

* *Origines Sacrae*, Lib. 3, c. 4.

† *Synopsis*, on Gen. vii. 19.

occupied by the human race, both the physical and the moral ends of that awful visitation were answered."*

The following statements to the same effect are made by Rev. David King, LL.D., of Glasgow, in a recent work: "Our best expositors of Scripture are now generally of opinion that the Flood, though extensive, was local. If we adopt the principle which the Scripture itself so unequivocally sanctions—that general terms may be used with a limited sense—the whole account is simple and consistent. A deluge of great extent inundated the dry land. In respect to men, whom it was designed to punish for their wickedness, it was universal, excepting only Noah and his family, whom it pleased God to spare alive. Along with them were preserved such animals as were most useful to them, and such as were fitted to fulfil the purposes of Divine Providence after the waters should have retired."†

This interpretation, it will be seen, disposes effectually and at once of all the objections urged against the Bible deluge on the ground of the insufficient capacity of the ark, of the difficulty of collecting all the various animals of the globe into one place, and of returning them afterward to their natural local habitations where they are now found. In a word, this interpretation of the sacred narrative completely and beautifully harmonizes every statement of God's word respecting this awful catastrophe with every discovery made by science in all the broad field of nature.

* *Scripture and Geology*, p. 247, etc.

† *Principles of Geology Explained*, pp. 56, 61.

In putting forth the opinion that the Deluge was partial as to the surface of the earth, we set aside, not the sacred narrative, but the common *interpretation* put upon it. While we differ and depart from the popular notion of the superficial extent of the waters of this great and terrible Flood, we hold with unyielding faith to the authenticity and full inspiration of its history as given us by Moses, the man of God—we hold to the physical character of the Deluge, to the Divine agency in it, and to the moral purpose to be accomplished by it. But while we believe all this, and regard it to be a fact of great moral significance that our race was thus early destroyed for their wickedness, we do not regard it to be a matter of the least moral or spiritual importance, whether or no the destructive element employed for this purpose rolled on its billows over dreary deserts or distant islands where no man was. The extent of the Deluge in this respect may be a question of interest in physical science, but it concerns religious faith or religious duty no more than the true figure of the earth or the motions of the heavenly bodies.

4. *How the Deluge was produced.*—"All the fountains of the great deep were broken up, and the windows of heaven were opened." These forcible and striking expressions, though highly figurative, no doubt set forth physical events of a stupendous character that actually took place; though we may not be able to state precisely or definitely what these were, yet we have many reasons to suppose that they were the results of natural agencies, operating according to their established laws, under the

direction and control of the Almighty; and the best comment, doubtless, that can be offered on the words is supplied by what are known to have produced similar cataclysms in other and remoter periods of our world's eventful history.

In regard to the terms employed by the sacred historian we may just remark that by "the breaking up of the fountains of the great deep," we are to understand, not as some of the old writers represent, an eruption of waters from extended subterranean seas or lakes, which we have no reason to believe have an existence, but the inrushing upon the land of the waters from their vast ocean receptacles, so frequently spoken of in Scripture as "the great deep." And by "the opening of the windows or *sluices* of heaven," probably nothing more is meant than remarkably heavy and continued rains, or, as we sometimes express ourselves, *torrents of rain*.

In our attempt to gain as correct and intelligent a view as possible of this great catastrophe, let us avail ourselves of what light modern investigations may serve to throw upon it. If we take a slender brass or iron hoop, and with the finger press it inward at any point, it will necessarily bulge out on either side in proportion to the depression made by the finger; and conversely, if we push it outward, the parts on this side and on that side of the point of pressure will be drawn inward. Now, similar results are produced in the earth's crust by the pressure of subterranean forces; the elevation by these of a continent, or of any considerable part of a continent, will be attended by a corresponding depression of the

bed of the adjoining ocean; or, the elevation of that ocean's bed will necessarily be followed by a depression of the continent. This is not mere theory, but an established fact. At this present time, while Scandinavia on one side of the North Atlantic is steadily rising from its waters, Greenland on the other side is as steadily sinking into them. This fact, if borne in mind, may help us to a conception of the manner in which the deluge might have been brought about.

Noah and the living creatures to be preserved with him having been safely lodged in the ark, and the fatal hour decreed having arrived, let us suppose that, at the behest of Omnipotence, *the ocean beds* encompassing that region of the globe inhabited by the antediluvians had been elevated step by step by the repeated impulses of subterranean forces, occurring, as they often do, at intervals of one, two or three days; and that at the same time *the whole of that region*, and to a distance beyond, had subsided at the same rate:—what would have been the consequences of all this? what would have taken place in the ocean, and what would have befallen the land and its occupants? The answer to this question is not difficult, and we need not travel back far in time to find it.

On the 13th of August, 1868, there occurred a fearful and most destructive earthquake on the Pacific coast of South America; those who perished by it were counted by tens of thousands, whilst the property destroyed could only be estimated by millions of dollars. The crust of the earth was swayed and upheaved a distance measured along the shore of some 250 miles, while the

disturbance extended far away under the sea. This agitated the ocean into waves of the most extraordinary character. At Arica, the centre of the violence, the sea was seen to retire, as if about to leave the shores wholly dry; but presently its waters returned with tremendous force. A mighty wave half a hundred feet high, whose length seemed immeasurable, was seen advancing like a dark wall upon the unfortunate city, a large part of which was overwhelmed by it; while two ships of war were carried far beyond the town, and there left stranded high and dry. At Chala, three such waves swept in, and overflowed nearly the whole town, the sea passing more than half a mile beyond its usual limits. At Islay and Iquique similar phenomena were witnessed. At the former place the sea flowed in no less than five times, and each time with greater force. Afterward the motion gradually diminished, but even an hour and a half after the commencement of this strange disturbance, the waves still ran forty feet above the ordinary level. At Iquique, the people beheld the intrushing wave while it was still a great way off. A dark-blue mass of water, some fifty feet in height, was sweeping in upon the town with inconceivable rapidity. An island lying before the harbor was completely submerged by the great wave, which still came rushing on, black with the mud and slime it had swept from the sea-bottom. Many buildings were washed away, and in the low-lying parts of the town there was a terrible loss of life.

This great ocean wave swept in all directions around the earth-throe, travelling at the rate of from 250 to 400

nautical miles an hour. In less than three hours after the occurrence of the earthquake, it reached and inundated the port of Coquimbo, in Chili, some 800 miles from Arica; and an hour later arrived at Constitucion, 450 miles still farther south, where for some three hours the sea rose and fell with strange violence. On the other hand, it travelled with equal swiftness northward, and swept the shores of southern California, rising upward of sixty feet above the ordinary sea-level, and presenting the most imposing of all the effects of the great shock. Even in San Pedro Bay, full 5000 miles from the centre of disturbance, a wave twice the height of an ordinary house rolled in with unspeakable violence only a few hours after the earthquake.

Not only did this fearful billow rush in upon the shores, the tremendous energy of the upheaving force sent it also outward into the open ocean. The Sandwich Islands, which lie 6300 miles from Arica, it might be imagined, would have been safe from its effects. But on that very night the sea around this group rose in a surprising manner, insomuch that the inhabitants thought the islands were sinking, and would shortly lie beneath the waves. Some of the smaller islands, indeed, were for a time completely submerged. Before long, however, the sea fell again, and as it did so the people were under the impression that the islands were rising bodily out of the water. For no less than three days this strange oscillation of the sea continued to be experienced, the most remarkable ebbs and flows being noticed at Honolulu. Onward, and still onward, over the broad bosom

of the Pacific the great sea-wave swept, and on the 14th reached Japan, where, 10,500 miles from Arica, enormous billows poured in succession upon the shores,—having travelled over considerably more than two-fifths of the earth's circumference, a distance which the swiftest ships could not traverse in less than six or seven weeks.

As over the northern hemisphere, so over the southern did this tremendous wave sweep. At about half past two on the morning of the 14th it rolled in upon the Samoa Isles; the watchmen startled the inhabitants from their sleep with the cry, that the sea was about to overwhelm them; and already, when the terrified people rushed upon their houses, the sea was found to have risen far above the highest water-mark. But it presently began to sink again, and then commenced a series of oscillations, which lasted for several days, and were of a remarkable nature. It occupied but a little space more before the huge billow arrived at the New Zealand Islands; four times did the sea retire, and four times did it return upon these shores with great power, at intervals of about two hours. It finally reached the coast of Australia, in five well-marked waves, and then gradually subsided.

Such were the effects of the earthquake of Arica. It has been calculated that the width of this immense wave varied from 200 to 1000 miles, and that its length in mid Pacific could not have been less than 8000 miles. Who can contemplate this enormous volume of water moving at such a fearful speed, and not be filled with awe in view of the power that sent it abroad!

Now, to come back to Noah—let us suppose that as soon as he and his living cargo had been shut up within the ark, the shock of an upheaval, like that of Arica, had been given to the *ocean beds* encompassing that region of the earth inhabited by the antediluvians, sending forth vast waves similar to the above; and that this had been repeated at intervals for many weeks, lifting the bottom of the seas higher and higher; while at the same time *the coasts and the whole of that region occupied by men*, as would be the necessary consequence, gradually sunk lower and lower; and that the atmosphere, affected by these commotions, poured down torrents of rain: *—supposing this to have taken place, and the deluge of Noah is before us in all its commotion and terror and destruction; the heavens are darkened by the descending torrents—rivers forsake their channels, or flow back upon their sources—vast and successive waves are everywhere rushing across the shores, choking the valleys, and overspreading the plains—cities are swept away—forests are submerged—and still, day after day, roll in the fearful tides, appearing to the doomed population as if “the fountains of the great deep were broken up”—higher and yet higher rise the waters—“they prevail exceedingly”—at length, not a voice is to be heard, not

* It is worthy of notice, as evidence of the accuracy of Scripture history, that just such rains as are indicated by the forcible expression, “the windows of heaven were opened,” are the usual concomitants of convulsions and cataclysms, such as was the deluge. “Subterranean movements and volcanic eruptions,” says Lyell, “are often attended, not only by incursions of the sea, but also by violent rains.”—*Principles of Geology*, Vol. I., p. 595.

a hill, or a mountain top to be seen, under the whole heaven!

It was after some such manner as this, we may suppose, the Noachian deluge was brought about; at any rate, many of our eminent geologists hold that some of the formidable cataclysms of the pre-Adamite periods were occasioned in this way, by the sudden upheaval of vast tracts of the sea-bed, which, by displacing great bodies of water, and rolling them outwards in the form of enormous waves, inundated wide regions elevated hundreds of feet over the ocean level, and strewed them over with the clays, gravels, and organic remains of deep sea bottoms.

After the lapse of some five months, or 150 days, the deluge of Scripture began to subside, and continued to do so, till, at the end of a year and ten days, the water was gone, and the ground left dry once more. This, we are left to suppose, was effected by a reversal of the order of the events by which the Flood was brought on, namely, by the subsidence of the ocean beds to their former depths, and the elevation of the lands to the height at which they stood before. As these two changes were gradually going on, the waters, aided by the propelling "wind which the Lord made to pass over the earth," would gradually return to their place in the great deep.

5. *Where the ark rested.*—The Scripture account of the deluge, definite as it may seem to the general reader, does not enable us to determine the locality at which the favored occupants of the ark disembarked. And

where the scene of a great event, which transpired in the remote past, is not settled by the definite statements of authentic history, it is not uncommon for various localities to put forth their claims to have been that scene; no less than seven cities contend for the honor of having given birth to the poet Homer, and the scene of our Saviour's transfiguration has been laid on three different and distant mountains, Tabor, Hermon, and the Mount of Olives. In likemanner various locations have claimed the honor and distinction of having been the resting-place of Noah's ark.

The earliest tradition that has come down to us fixed this memorable event in a mountain range of Kurdistan. This was the common belief among the Chaldeans; and the Syriac translators and commentators, and all the Syrian Churches, have followed the same.

A very remarkable record of the Flood and the ark has recently been brought to light from the ruins of the palace of King Assurbanipal, at Nineveh. It was found inscribed on a tablet. The narration is delivered in the person of the rescued (Noah). This legend appears to be a copy of a still older record, made for this monarch's library; the original composition, in the opinion of Mr. George Smith of the British Museum, must have been written as early as the seventeenth century before the Christian era, and perhaps much earlier. The inscription is in the form of verse, and is quite lengthy. Assured that it will be of interest to the reader, we quote what relates to the stranding of the ark—it is as follows:

Six days and nights
passed, the wind tempest and storm, overwhelmed,
on the seventh day in its course, was calmed the storm, and all the
tempest

which had destroyed like an earthquake,
quieted. The sea he caused to dry, and the wind and tempest ended.
I was carried through the sea. The doer of evil,
and the whole of mankind who turned to sin,
like reeds their corpses floated.
I opened the window and the light broke in, over my refuge
it passed, I sat still and
over my refuge came peace.

I was carried over the shore, at the boundary of the sea,
for twelve measures it ascended over the land.
To the country of Nizir, went the ship;
the mountain of Nizir stopped the ship, and to pass over it, it was
not able.

The first day and the second day, the mountain of Nizir the same.
The third day and the fourth day, the mountain of Nizir the same.
The fifth and sixth, the mountain of Nizir the same.

On the seventh day in the course of it

I sent forth a dove, and it left. The dove went and searched, and
a resting-place it did not find, and it returned.

I sent forth a swallow and it left. The swallow went and searched, and
a resting-place it did not find, and it returned.

I sent forth a raven, and it left.

The raven went, and the corpses on the waters it saw, and
it did eat, it swam, and wandered away, and did not return.

I sent the animals forth to the four winds. I poured out a libation.

I built an altar on the peak of the mountain,
by seven herbs I cut,

at the bottom of them, I placed reeds, pines, and simgar.

The gods collected at its burning, the gods collected at its good
burning.

The gods like sumbe over the sacrifice gathered.

Respecting the place where the ark rested, Mr. Smith
observes, "The difference between the Bible and the
inscription as to where the ark rested is more apparent

than real. The Bible says Ararat; Berosus says the Gordiæan mountains, and commentators are inclined to locate Ararat in the Gordiæan mountains east of Assyria. The inscription calls the mountain Nizir, which according to an inscription of Assur-nazir-pal, King of Assyria, who made an expedition thither, lay east of Assyria, and formed part of a series of mountain chains extending to the northwest into Armenia."

A tradition of a later date than the above, and the one which has been commonly adopted by the Christians of the West, makes the ark to have rested on a great and remarkable mountain in the north of Armenia. Such influence had this tradition on the popular belief, as in course of time to give to that towering eminence the name of 'Ararat—as if no doubt could be entertained that it was the Ararat of the Scriptures. This mountain rises immediately out of the plain of the Araxes, and terminates in two conical peaks, named the Greater and Lesser Ararat, about seven miles distant from each other; the former of which attains an elevation of 17,260 feet above the level of the sea, and about 14,000 above the plain of the Araxes, while the latter is lower by about 4000 feet. The higher peak for about 4000 feet down from its summit is covered with eternal ice and snow. Viewed from the plain it is a mountain of aspect unsurpassed in grandeur. Nothing can be more beautiful in form, nothing more awful in height. "It was not until we had arrived upon the flat plain," says Sir R. K. Porter, "that I beheld Ararat in all its amplitude of grandeur. From the spot on which I stood, it

appeared as if the highest mountains of the world had been piled upon each other, to form this one sublime immensity of earth, and rock, and snow. The icy peaks of its double head rose majestically into the clear and cloudless heavens; the sun blazed bright upon them, and the reflection sent forth dazzling radiance equal to other suns. My eye, not able to rest for any length of time upon the blinding glory of its summits, wandered down the apparently interminable sides, till I could no longer trace their vast lines in the mists of the horizon; when an irrepressible impulse immediately carrying my eye upwards again, refixed my gaze on the awful glare of Ararat; and this bewildered sensibility of sight being answered by a similar feeling in the mind, for some moments I was lost in a strange suspension of the powers of thought."

Various attempts were made in different ages to ascend this tremendous mountain pyramid, but in vain. In the year 1700, Tournefort, a French traveller, undertook to reach its summit; long he persevered in the face of many difficulties, but was foiled in the end. Early in the present century the Pasha of Bayazeed attempted its ascent, but with no better success. It was not until 1829, that this difficult and perilous feat was accomplished; when Professor Parrot, a German, acting under Russian auspices, after having been twice repelled by the snowy crest, in his third attempt succeeded, and stood upon the mountain's summit. He found himself on a slightly convex and almost circular platform, about 220 feet in diameter, which at the extremity declined steeply on

all sides. This was the silver crest of Ararat, composed of eternal ice, unbroken by a rock or stone. Parrot and his companions spent three-quarters of an hour on the summit, and then after planting an oaken cross thereon, descended. In descending, "it was a glorious sight," he relates, "to behold the dark shadows which the mountains on the west cast upon the plain, and then the profound darkness which covered all the valleys, and which rose gradually higher and higher on the side of Ararat, whose icy summit was still illumined by the beams of the setting sun."

From the foregoing description, it is sufficiently apparent that the ascent or descent of the mountain to which tradition has given the name Ararat, is an achievement beset with difficulties and perils all but superhuman. And hence it must be evident to common sense that its summit could not have been the resting-place of the ark, and the spot where all its living tenants were disembarked. For how possibly could these have found their way in safety down to the habitable region far below? To say nothing of the family of Noah, the heavier beasts, without miraculous aid must have slidden and rolled and been dashed in pieces over its icy precipices, and without miraculous protection the lighter and more delicate creatures in their attempts to creep slowly down would have been frozen to death before they had reached half way to a congenial climate. But no such miraculous interposition is recorded, nor even an intimation given that it took place.

Sir R. K. Porter, whose vivid description we have just

quoted, seeing plainly this insuperable difficulty, conceived the idea, that the ark rested in the space between the two peaks of Ararat, and not on the top of either. But neither can this opinion be maintained. If the ark rested in this intervening space, the tops of both peaks must have been above the surface of the waters, and must have been visible from the ark. But the sacred history states particularly that nothing but one wide waste of waters was to be seen at the time the ark rested, and that it was not until the subsidence of the Flood had been going on for two months and a half longer, that the tops of the mountains became visible.—It is obvious, therefore, that we must look away from what is now called Ararat for the resting-place of the ark.

The words of the Sacred Narrative, “upon the mountains of Ararat,” cannot either with propriety or correctness of language be applied to any single eminence such as the above; the expression is in a plural form, and may be applied to a mountainous district, but not to an isolated peak. As by the terms, “mountains of Israel,” “mountains of Samaria,” “mountains of Abarim,” is meant the mountainous districts of those countries; so by “mountains of Ararat” we are to understand a mountainous district of country distinguished by that name. The word *Ararat* occurs in three other places in the original Scriptures: 2 Kings xix. 37; Isaiah xxxvii. 38; and Jeremiah li. 27—in Kings and Isaiah it is translated *Armenia*, and it is now held by our highest Biblical authorities that what is intended in the narrative of the

deluge by "mountains of Ararat" is the mountainous region of Armenia, that is, the Armenian Plateau, which extends far south and east of the mountain peak now called Ararat.

This Plateau raises its broad and long and rugged back, like an island, from a *Sea of Plain*, to the various heights of two, three, and even four thousand feet above its general level. It does not anywhere rise to a sharp or well-defined central crest, but expands into plains or steppes separated by a graduated series of subordinate ranges. It is in general far more accessible, both from without and from within, than other districts of similar elevation. The passes, though high, are comparatively easy, and there is no district which is shut out from communication with its neighbors. Thus constituted, this plateau was a natural resting-place for the ark as the deluge subsided, while its geographical position was eminently favorable for the general distribution of the men and animals that should afterward spring from those saved in it. This highland region of country occupied a central position between the Euxine and Caspian Seas on the north, and between the Persian Gulf and the Mediterranean on the south. With the first of these it is connected by the Acampis, with the second by the Araxes, with the third by the Tigris and Euphrates, the latter of which also serves as an outlet towards the countries on the Mediterranean coast. These seas were the high roads of primitive civilization, and the plains watered by these rivers were the seats of the most powerful nations of antiquity, the Assyrians,

the Babylonians, the Medes, and the Colchians. Hence Armenia has come to be regarded as the centre from which the earth was overspread with its present population.

We have now reviewed the main points in the history of the Noachian Deluge, and trust have made it apparent, that the Sacred Record embodies not a statement, that is not in harmony with the known operations of nature; not a statement indeed, but is sustained and corroborated by the most recent developments of science. Every fact stated in relation to this great cataclysm, and to the ark and its rescued inmates, fairly interpreted, is found to be in entire accordance with all that has been established, whether by geology, physical geography, or natural history. The objections which were wont to be urged against the Bible on this ground have lost what seeming force they once possessed, and the credibility of the Mosaic account was never made so apparent as it is by the light of the present day. And thus the great lesson of this tremendous judgment still stands unclouded in the sight of all the world:

“There is a time, and Justice marks the date,
For long-forbearing clemency to wait;
That hour elapsed, th’ incurable revolt
Is punished, and down comes the thunderbolt.”—COWPER.

Let not this fearful lesson be lost upon the present generation. Let not the fact be overlooked, that its prime procuring cause was identical with the spirit, which, in our own day, seeks to sap the foundations of all morality and religion—a *denial and disregard of the*

Presence and Agency and Providence of God in the world.

This was the evil seed which ripened into the abounding harvest of iniquity which called forth the catastrophe of the Deluge, and therein revealed the Almighty in the character of an avenging Judge.

In the contemplation of this dark cloud of wrath, we should not, however, be unmindful of the beams of mercy that, in the end, broke radiant through its darkest folds. There is something unspeakably gracious in the spirit of the promise made to Noah, as he and his family set foot on the purged and renovated earth, that the waters, which had displayed such a scene of terror to them, "should no more destroy all flesh." And to allay their fears and to restore confidence, he condescends even to confirm his word by a visible token in the clouds. And oh :

When, o'er the green, undeluged earth,
Heaven's covenant thou didst shine,
How came the world's gray fathers forth
To watch thy sacred sign !
And, while its yellow lustre smiled
O'er mountains yet untrod,
Each mother held aloft her child,
To bless the bow of God.
How glorious is thy girdle cast
O'er mountain, tower and town,
Or mirror'd in the ocean vast,
A thousand fathoms down.
As fresh in yon horizon dark,
As young thy beauties seem,
As when the eagle from the ark
First sported in thy beam.
For, faithful to its sacred page,
Heaven still rebuilds thy span,
Nor lets the type grow dim with age,
That first spoke peace to man.—CAMPBELL.



STATISTICS

AND

THE MULTIPLICATION OF THE HEBREWS.

There are a power and tendency in human beings to increase so rapidly, that in point of fact, it is only in a few favored spots that they do increase at the full rate of their capacity.—MALTHUS.





THE ISRAELITES PLANTED IN THE PROVINCE OF GOSHEN: 1. THE ORIGINAL
NUMBER OF SETTLERS THERE; 2. THE RATE OF THEIR INCREASE; 3. THE
LENGTH OF THEIR STAY: COMPUTATION FROM THESE DATA.

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STATISTICS

AND

THE MULTIPLICATION OF THE HEBREWS.



THE revelation made by God to man, after his fall, was committed to the race in general; no one particular family or tribe was chosen to be its special custodian. Under this economy, after the lapse of a few generations only, the result was that that revelation became so obscured, perverted and neglected as to be well-nigh lost from the world. After the Flood, the renewed knowledge of the character and worship of God was in like manner intrusted to the children of Noah indiscriminately; and again within a comparatively brief period, all correct and worthy views of the Divine Being rapidly vanished from among mankind, and were as rapidly succeeded by the spirit and practice of idolatry. Revealed truth having been thus twice committed to the race in general, and been twice all but lost, it became necessary to place it under some *special guardianship*, and to surround it by a system of

significant and peculiar ordinances, in order to its preservation. For this end God made choice of the seed of Abraham. Over this elect people, therefore, He exercised special supervision, ordering their movements, and appointing to them their dwelling places. For a time it was ordained that they should sojourn as strangers in the Land of Canaan, a land which it was promised them, they should afterward receive as their own absolute inheritance. Meanwhile they were carried down into Egypt, where, in the wonder-working providence of God, they had assigned to them the rich and pleasant province of Goshen for the place of their habitation. Here, through the influence of Joseph, they dwelt in royal favor for a season; and under the special blessing of Heaven, multiplied and prospered exceedingly. But time brought on its inevitable changes; Joseph's generation passed away, and another generation came. At length their numbers and wealth reached a point that filled the Egyptians with alarm, lest the people should become more and mightier than themselves, and eventually aided by enemies assume the mastery of the whole land. To arrest their prosperity and retard their multiplication, therefore, a system of galling oppression was adopted towards them. "They did set over them taskmasters to afflict them with burdens. And the Egyptians made the children of Israel to serve with rigor; and they made their lives bitter with hard bondage, in mortar, and in brick, and in all manner of service in the field." Moreover, they ultimately sought to destroy their male children by casting them into the

river. "And the children of Israel sighed by reason of the bondage, and they cried, and their cry came up unto God." And the Lord heard them, and appeared unto Moses in the far-off land of Midian, and said unto him, "I have surely seen the affliction of my people which are in Egypt, and have heard their cry by reason of their taskmasters; for I know their sorrows, and I am come down to deliver them out of the hand of the Egyptians, and to bring them up out of that land unto a good land and a large, unto a land flowing with milk and honey. Come now, therefore, and I will send thee unto Pharaoh, that thou mayest bring forth my people out of Egypt." But Pharaoh would not let the people go. After a series of miraculous inflictions both upon himself and his people, however, he was obliged to consent to their departure. "And the children of Israel gat them up, and departed out of Egypt, about 600,000 men, beside children. And a mixed multitude went up also with them, and flocks and herds, even very much cattle." Such, in brief, is the record of the Hebrews' sojourn in the land of Egypt.

This account is held to involve a serious difficulty, and which has been vehemently urged by the enemies of the Bible as an argument against its credibility. This difficulty lies in their vast and extraordinary multiplication during their stay in Goshen; and the objection based upon it is usually put something after this manner:

"We are told that the family of Jacob, numbering in all seventy souls, went down into Egypt and dwelt

there; and that after a period which could not have exceeded 215 years, their descendants numbered more than 600,000 males, twenty years old and upward; and these, according to the usual ratio, represent an aggregate population of nearly two and a half millions of both sexes and all ages. Such an increase has never been known, and is at variance with the established laws of physiology. The Bible history of this people, therefore, is incredible, and must be rejected."

This objection, we own, carries on its face the appearance of force; and if the data upon which it is based were correct and embraced *all* the facts in the record, it must be admitted that it would prove fatal to the credibility of the sacred history. But this we now undertake to prove is far from being the case, and that the objectors do not fairly interpret the inspired narrative.

The exact number of able-bodied men among the Israelites, according to the actual reckoning made by Moses shortly after their departure from Egypt, was 603,550. In this class we may fairly include all between the ages of 20 and 70.* Now the proportion of this class to the whole population, as indicated by the Census Tables of the United States, is as 1 to 3.63. Computing, then, after this ratio, the total number of Hebrews that went out of Egypt amounted to 2,190,886 souls.

*The age of seventy years cannot be regarded as too advanced a limit for that period and people. "And now," said Joshua, "lo I am this day fourscore and five years old: as yet I am as strong this day as I was in the day that Moses sent me; as my strength was then, even so is my strength now, for war, both to go out and to come in."—*Joshua* xiv. 10, 11.

Now, in order to determine what weight there is in the objection before us, and to pronounce intelligently upon the correctness of the Scripture statement respecting the multiplication of this people in Egypt, and their number at their departure thence, three things must be considered—the original number of settlers in Goshen, the rate at which they increased, and the length of time they remained there. Let us then endeavor to ascertain,

First, *What was the original number of settlers in Goshen from whom the people of the "exodus" sprang.* This is put down in the objector's argument as "seventy souls." These words, it is admitted, are to be found in the Scripture, for thus we read, "All the souls of the house of Jacob, which went down into Egypt, were threescore and ten." But when we come to examine the record more closely and in detail, we discover, first, that these seventy souls comprise only the *men*, with two exceptions only, who for certain reasons are singled out to be included in this list with the males. The married daughters and granddaughters of Jacob are not mentioned, yet these, according to the uniform ratio of the sexes, must have been about equal in number with his sons and grandsons. Here, then, we at once double the number stated in the objection. Again, in the "seventy souls" no account is taken of the wives of Jacob's sons and grandsons; nor again of the husbands of his daughters and granddaughters. Supplying all these omissions, we have for the family of Jacob as it entered Egypt, reckoning the household of Joseph, who was there already, instead of seventy souls, about four times that number.

But even this is far from being all. The children of Israel entered Egypt with their "households" (*taph*), or retainers. What the size of a patriarchal household often was, we may gather from the history of Abraham, who at an hour's notice was able to call out 318 trained servants, capable of active military service. All these, we are told, "were born in his house," words that imply that he had other servants that might have been employed on this occasion, some "bought with money from strangers," and some acquired as "gifts," like those presented to him in Egypt. From all these facts, the most moderate and cautious estimate cannot make the entire number of Abraham's household less than 2500 souls. He was, in fact, one of the most powerful chiefs of the land, and one of these, Heth, addresses him as: "My lord, thou art a mighty prince among us."

Now, we have several reasons for believing that Jacob's "household," on going down to Egypt, was far more numerous than that of Abraham. So strong was Jacob even on his return from Padan-Aram that his offended brother Esau did not think it wise or safe to meet him with less than "four hundred armed men." And the princely gift which he made Esau, in the hope of reconciliation, offers a similar indication of his great wealth and power. Supposing that present to have been a tenth part of all he possessed, the proportion Abraham thought a fit offering to a king, then Jacob's possessions must have numbered 2200 goats, 2200 sheep, 600 camels, 500 oxen, and 300 asses. Such was the family, and such the property Jacob had acquired in the twenty

years he spent with Laban, beginning with naked hands. What then must have been the increase of his household, and of his herds and flocks, aided by all his twelve active sons in the course of thirty-three years more, or at the time of his going down into Egypt? Besides all this, Jacob came into possession at once by inheritance of at least one-half the retainers and property owned by his father Isaac, who died some ten years after his return to Canaan. From all these facts, we think it obvious that the household of Jacob when he set out for Egypt, which in fact embraced the twelve distinct households of his sons, including the numerous retinue of Joseph, far outnumbered that of Abraham, and that we cannot put it down at less than 3600 souls, or an average of 300 only for each tribe.

To all the foregoing is to be added the fact that Goshen, when assigned to the children of Israel, had already its scattered inhabitants of various "strangers," who amounted, we may safely say, to not less than 700 throughout that large and fertile province. These would naturally become incorporated and amalgamated with the dominant tribe, both in blood and religion; so that the whole population would soon be named and numbered as Hebrews.

We have, then, an aggregate of 4300 original settlers in Goshen, from whom were to spring the people of the exodus. No one that will study and candidly weigh the above facts—facts all embraced in the sacred record—can put their number at a lower figure.

Second, *What was the probable rate at which they*

increased? All things in the situation, circumstances, and relations of the Hebrews, in Goshen, were eminently favorable to rapid multiplication. Their climate was mild and salubrious, their territory large and fertile, capable of supporting a population of several millions. The lands would produce of many things two crops a year and of some things a crop every month. Maize, millet, rice, lentiles, pulse, figs, dates, olives, grapes, melons, and esculent roots, as also wheat, rye, barley, etc., could have been raised there, as the present condition of the country demonstrates, with little labor and in the greatest abundance. The increase of the population, therefore, was subject to no check arising from soil or climate; on the contrary, they were most favorably conditioned in regard to both.

At first, and for some length of time after, they also enjoyed all the advantages that could flow from royal favor; these would have their attraction, and in the hope of sharing directly or indirectly in them, many would naturally flock in from all sides, and take up their abode among them, and thus materially help to swell their numbers in time.

Enjoying the freedom and following the simplicity of a pastoral life, we learn that this people were remarkably healthy and vigorous. It was the testimony of the midwives to Pharaoh, that "the Hebrew women were not as the Egyptians, but were lively," that is quick and strong in bringing forth, so that "they were delivered ere they came in unto them." And when, at length, the people assembled for their departure out

of the country, we read that "there was not one feeble person among them."

Further, the region of Egypt was ever famous for its fertility in men. The sexes matured and married young, often as early as the age of fourteen or fifteen; both Pliny and Seneca speak of this; and Aristotle informs us that three at a birth was nothing uncommon. Whatever there was in the region conducive to this fecundity was no doubt shared to the full by the Hebrews.

With all the above, we must not omit to mention the special blessing of God which was upon them and their children for their increase. This had been expressly and repeatedly promised, to Abraham and Isaac and Jacob. Accordingly we read of them, while yet in Goshen, "And the children of Israel were fruitful, and increased abundantly, and multiplied, and were exceeding mighty, and the land was filled with them."

Now, since in ordinary circumstances, as Malthus has shown, a population tends to double every twenty-five years, we are warranted to conclude that the Hebrews, under the above extraordinary combination of favorable circumstances, must have doubled in a considerably shorter period. But to make sure that we are on the side of truth, we will only say that they doubled every twenty-four years.

Third, *What was the duration of their stay in Egypt?* This is a question involving several difficulties. We have seen that this period is put down in the objector's argument at 215 years; but we cannot receive this reckoning of the time as correct. However, not to

interrupt our argument with a discussion of the point here, we will admit for the present, that their sojourn in Goshen was but 215 years.

Having now decided upon these three essential facts, namely, that the original number of settlers in Goshen was 4300, that the rate at which they increased was doubling every 24 years, and that the length of time they remained there was 215 years—we are prepared to compute the total Hebrew population at the date of their exodus, under the direction of Moses. Their natural increase would stand as follows :

| | | |
|------------------------|--|---------------------------|
| 4,300 in..... 0 years. | | 137,600 in.....120 years. |
| 8,600 " 24 " | | 275,200 "144 " |
| 17,200 " 48 " | | 550,400 "168 " |
| 34,400 " 72 " | | 1,100,800 "192 " |
| 68,800 " 96 " | | 2,201,600 "216 " |

The above calculation plainly shows us, then, that the original settlers of Goshen, according to the natural law of increase, in a period of 216 years, would amount to a population of 2,200,000; and this result, it will be observed, is so near that obtained by the actual numbering of the people at Sinai, namely 2,191,000, as to leave no reasonable foothold to call in question the credibility of the Scripture history on this ground.

On the preceding page we expressed our dissent from the chronology which limits the stay of the Israelites in Egypt to a period of 215 years. As this is what has created the whole difficulty, and what lends to the opposer's argument whatever of seeming force it presents, we deem it proper and necessary to add a few lines on

EGYPTIAN BRICK-FIELD.

"And they made their lives bitter with hard bondage, in mortar and in brick, and in all manner of service in the field."



FROM A TOMB AT THEBES.

"The countenances of the workmen are perfectly Jewish."—*Lit. Gazette.*

the point. The calculation that gives a period of 215 years only for the stay of the Israelites in Egypt is based upon what are admitted on all hands to be genealogies of doubtful interpretation, and has come down to us from the later Jews by tradition. Though adopted by some, it is far from meeting with general acceptance; it is in fact rejected and opposed by many of the most distinguished biblical scholars of the day, in Germany, England, and America. There are three distinct and unequivocal texts of Scripture that appear decisive against it.

Exodus xii. 40, 41, asserts that the Israelites' abode in Egypt was 430 years—"Now the sojourning of the children of Israel which they sojourned in Egypt was four hundred and thirty years. And it came to pass at the end of the four hundred and thirty years, even the selfsame day it came to pass, that the hosts of the Lord went out from the land of Egypt." And here is found no manuscript variation in the Hebrew text.

Again, Genesis xv. 13 declares the future servitude and affliction, not of Abraham, but of his "seed," to be, in round numbers 400 years—"And he said unto Abram, know of a surety that thy seed shall be a stranger in a land that is not theirs, and shall serve them, and they shall afflict them four hundred years." The idea entertained by some that this period was to be partly spent in Canaan is cut off by the statement that it should be "in the land not theirs"—*one* land too—in strong contrast to the repeated guaranty of the land of Canaan to Abraham and his seed as their own. The inclusion of

any part of Abraham's own history in this period of *servitude and affliction* seems forbidden by the positive assurance that he should go to his grave in peace, and the manifest assignment of this servitude to the distant future. Besides, Abraham's residence in Egypt had taken place *before* the above prophecy was uttered.

The statement of Stephen, in Acts vii. 6, 7, is in entire accordance with the foregoing passage and the interpretation put upon it—"And God spake on this-wise, That his seed should sojourn in a strange land; and that they should bring them into bondage and entreat them evil four hundred years."

It is to be observed, however, that Paul, Galatians iii. 17, speaks as if 430 years was the lapse of time between the promise to Abraham and the giving of the Law, but in this he doubtless simply conforms to the traditional view of the Jews, and the phraseology of the Septuagint, which alone was in the hands of his Gentile readers, and because the precise length of time did not affect his argument. It was, on any view, 430 years.

Allowing, then, what the Scripture thus plainly and repeatedly declares, that the period spent by the children of Israel in Egypt was, not 215, but 430 years, and all difficulty and all doubt, as to their multiplication into the numbers said to have followed Moses into the wilderness, at once vanish.

NOTE.—The assignment of a period of only *two hundred and fifteen years* to the sojourn of the Hebrews in Egypt has come down to us from the Septuagint as the *traditional* theory; but in modern times this theory, after thorough investigation of all existing data, has been

strongly opposed. Among those who dissent from it are Rosenmüller, Hofmann, Jahn, Ewald, Gesenius, Winer, Tach, Kurtz, Delitzsch, Keil, Knobel, Kalisch, and many others of similar rank as scholars. Neither side of this question is without its difficulties. But, all the facts of Sacred History considered, we encounter far less difficulty in fixing the time of the sojourn in Egypt at 430 than at 215 years. The reader who may wish to pursue further his investigation of this point will find it of special advantage to consult what Knobel and Kurtz have written on the subject.



GEOLOGY

AND

THE WILDERNESS OF SINAI.

The Peninsula of Mount Sinai is, geographically and geologically speaking, one of the most remarkable districts on the face of the earth. It combines the three grand features of earthly scenery—the Sea, the Desert, and the Mountains. And it has a history as unique as its scenery and position.—DEAN STANLEY.

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THE WILDERNESS THE CHOSEN SCHOOL OF THE ISRAELITES: DIFFICULTY IN REGARD TO THEIR SUBSISTENCE THERE: NEW LIGHT FROM RECENT INVESTIGATIONS: ITS GEOGRAPHY AND GEOLOGY: ITS MINES: ITS WATER SUPPLIES: ITS FORESTS AND PASTURAGE: CHANGE IN ITS SOIL AND CLIMATE: ITS ANCIENT CAPACITY FOR SUPPORTING A POPULATION: THE MOSAIC HISTORY CORROBORATED.



GEOLOGY

AND

THE WILDERNESS OF SINAI.



WHEN Moses, under the immediate direction of God, assembled and led forth the hosts of Israel out of Egypt, to take possession of Canaan, their long-promised inheritance, he did not conduct them along the direct and usual route, a distance of some two hundred miles only, and which they might have accomplished with ease in less than a month. This did not comport with the plan and purpose of Divine Wisdom; they were not then fitted to undertake the expulsion of the various warlike tribes occupying the land, nor adequately instructed so as to settle down in it as the true worshippers and peculiar people of the one only Living God. It was necessary, therefore, that they should be schooled—that they should be detained by the way, to undergo a preparatory course of instruction, discipline, and organization. Accordingly, as affording a most appropriate theatre for

all this, they were led by a different and circuitous course through the heart of the wilderness of Sinai; this made their direct line of march a distance of more than 1000 miles, and which, owing to their unbelief and rebellion, was attended with such protracted delays, that they did not accomplish it until the end of forty years.^o

Connected with the stay and wanderings of Israel in this wilderness is a matter of apparent, and long thought, real difficulty, and which has often been urged as an unanswerable argument against the credibility of their history—it relates to the subsistence of themselves, and of their flocks and herds while in this barren and inhospitable region. ~~X~~“That wilderness,” it has been asserted, “is, and always must have been wholly incapable of affording an adequate supply of either food or water to a horde of more than two millions of people, together with their numerous herds and flocks.” The Mosaic narrative places them in a desert, whose physical destitution and desolation demonstrate it to have been an impossibility for them to have subsisted there. ^{*}“That narrative, therefore, cannot be true and cannot be credited.”^u

This difficulty, we may observe at the outset, is of no weight so far as supplies for the human population were concerned; their wants were met largely by miraculous provision—water was brought for them from the flinty rock; innumerable flocks of quail were made to alight once and again around their camp; and they were furnished with manna from heaven throughout their journey, even until the day they ate of the new corn in Canaan. The difficulty concerns the flocks and

herds only. They went out of Egypt, we are told, "with very much cattle." Now, whatever the number of these might have been when they started, for aught that appears to the contrary in the history, they might have diminished rapidly as they advanced on their journey; indeed, no mention is made of the people possessing any considerable numbers in the latter portion of their pilgrimage, until an enormous booty was captured from the Midianites, as related in Numbers, chap. xxxi. v. 32, 33.

To the foregoing consideration we may add the fact, that there have been ample evidences brought to light, within the past few years, to prove that this wilderness was anciently very much more productive than it is at present, and that it was quite capable of furnishing pasturage to great herds and flocks. The explorations of H. B. Tristram, of F. W. Holland, of "The Ordnance Survey Expedition" in 1868-1869, and of Professor E. H. Palmer in 1869-1870, have placed this fact beyond a doubt; and not only that, but have also traced such a connection between the features, the scenery, the distances and the localities of this desert, and those named and described in the sacred history, as affords a convincing confirmation of its correctness and credibility.

To see the full bearing of these recent scientific investigations upon the difficulty under consideration, and so meet it the more satisfactorily, it will be necessary to describe the physical character of this region somewhat in detail.

The Red Sea, running up from the Indian Ocean between the continents of Africa and Asia, at its northern

extremity divides into two branches, which diverge at an angle of about 50° ; that to the west is the gulf of Suez, and that to the east the gulf of Akabah. These, with the escarpment of the Tih, like a curving mountain chain connecting their extremities, embrace a triangular peninsula. The sides of this triangle measure 190 and 130 miles respectively, and the length of its base is about 150 miles. Within these bounds is embraced an area of some 11,600 square miles—this is the “Wilderness of Sinai.”

Along the base, or immediately south of the Tih frontier, a belt of sandstone country crosses the peninsula nearly from one shore to the other. “The hills of this district are for the most part low and isolated, with broad plateaux for their summits; but the fantastic shapes and gorgeous coloring of the rocks more than compensate for the deficiency in height; and some of the sandstone peaks, such as Umm Rijlain, are among the most striking features in the peninsula. Broad, undulating plains, and narrow valleys with sheer precipitous sides, are among the most conspicuous features of this belt of country. This formation is rich in mineral wealth, containing many veins of iron, copper, and turquoise.

“The east and west sides of the peninsula are bordered by strips of comparatively level desert; that on the eastern side wholly disappears here and there, when the mountains come down in sharp escarpments to the sea; on the western side it grows gradually larger as it runs southward, and obtains its maximum breadth at Tor.



THE MAP OF THE WILDERNESS OF SINAI.

REFERENCE.

- 1 Ramess
- 2 Succoth
- 3 Itham
- 4 Pitholoth
- 5 Etham
- 6 Sittim
- 7 Marah
- 8 Murr
- 9 Red Sea
- 10 Mouth of Nile
- 11 Dophkah
- 12 Alah
- 13 Rephidim
- 14 Well of Water
- 15 Well of Water
- 16 Taborah
- 17 Kibroth Hattaavah or Topel
- 18 Hazeroth
- 19 Kibroth-harva
- 20 Kibroth-harva
- 21 Lithah or Lethan
- 22 Riasah
- 23 Kibroth-harva
- 24 Shaphar Mt.
- 25 Hazeroth
- 26 Makeloth
- 27 Tahash
- 28 Terah
- 29 Mithab
- 30 Hazeroth
- 31 Horath
- 32 Moseroth or Moserah
- 33 Bene Jaakan or Banca
- 34 Horgadigud or Gudegud
- 35 Kibroth-harva
- 36 Kibroth-harva
- 37 Kibroth-harva
- 38 Rithonah or Radeh
- 39 Mount Hor or Sela
- 40 Taborah or Kibroth-harva
- 41 Hazeroth
- 42 Pithon or Pithon
- 43 Oboth
- 44 Tis or Ije-Abarim
- 45 Zered
- 46 Zered
- 47 Jahaz
- 48 Pithon
- 49 Shittim

JOURNEYS AND ESCARPMENTS
OF THE

ISRAELITES.

Here it is a broad undulating plain of gravel, which, as the largest unbroken expanse in the country, is called emphatically El Gaah, or The Plain. Its monotonous level is only broken by a low range of hills skirting the shore, and two small conical hills in its centre.*

With no exceptions of note save the above, the whole of the Peninsula of Sinai consists of a cluster of bold granite peaks, rent and furrowed by innumerable ravines and gorges and wadys. Few countries, if any, on the face of the globe, exhibit so wild an aspect; the mountains appear heaped together in utter confusion when viewed from the summit of some surmounting eminence. "I have stood on the summit of the great Etna," says Mr. Stephens, "and looked over the clouds floating beneath it; upon the bold scenery of Sicily, and the distant mountains of Calabria; upon the top of Vesuvius, and looked down upon the waves of lava, and the ruined and half-covered cities at its base; but they are nothing compared with the terrific solitudes and bleak majesty of Sinai." Another traveller, Dean Stanley, who recently visited this region, says, "The portentous appearances are such as give the impression that you are indeed travelling in the very focus of creative power."

The bright red granite, which forms the mass of this mountainous district, in many places, is intersected with porphyry and greenstone. Though granite and porphyry are both of igneous origin, yet they are not the productions of ordinary volcanic agency. The visible symbols

* * Palmer's *Desert of the Exodus*, pp. 29, 30.

of the glory and majesty described by Moses, as attending the giving of the Law, could not have been, therefore, as ignorant scepticism has sometimes insinuated, the heaving and smoke and eruption of a volcano, for there is no certain indication anywhere that such a thing as a volcano ever existed on this peninsula. "What has been taken, by unpractised eyes, as evidences of volcanic action, are only the detritus of iron in the sandstone formation. Whatever traces of igneous action may appear on the granite rocks belong to their first upheaving, not to any subsequent convulsions. Everywhere there are signs of the action of water, nowhere of fire."* Not a trace of basalt, lava, or other products of volcanic agency has been met with in the whole Peninsula.

The mountain peaks, which form the granitic kernel of this whole region, are divided into three groups, each with a central summit—the northwestern cluster, of which the most notable peak is Mount Serbal; the central cluster, whose highest point is Mount St. Catherine; and the southeastern cluster, the crowning summit of which is Um Shomer.

Um Shomer, on account of its distance and difficult ascent, remained until comparatively recent times but imperfectly explored. It was visited by but few, and ascended, we believe, by none, until Burckhardt made the attempt; and even this adventurous traveller came short of its summit by some two hundred feet. Captains Wilson and Palmer of the Ordnance Survey, however,

* Stanley's *Sinai and Palestine*, p. 23.

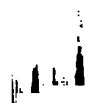
stood upon its very apex. Its sides are steep and rugged, its top is white, and its surroundings are those of utter desolation and solitude; the silence that prevails around it is even oppressive; yet this profound and awful stillness is sometimes broken by mysterious noises, which Burckhardt describes as the sound of artillery, the precise cause of which he failed to ascertain—probably produced by falling rocks, or gliding fragments, among its echoing precipices. The highest peak of Um Shomer reaches an altitude of 8500 feet above the sea.

The central cluster is divided by two deep and nearly parallel valleys into three distinct ridges, known by the Arabic names Jebel Humr, Jebel Músa, and Jebel ed Deir. The last, the eastern of the three, like all the rest, is a vast pile of steep and rugged granite, but inferior in elevation, and in the view it commands, to all the other principal mountains. Jebel Humr is the western range, and from the southern end of this springs its loftiest peak, Mount St. Catherine, 8526 feet above the level of the sea. This peak is largely composed of porphyry. It is a sublime Tower, and magnificent is the view from its summit, which embraces not only the labyrinth of bare granite peaks and deep dark ravines all around, but a panorama of the whole peninsula—the majestic Serbal on the one hand, and the towering cone of Um Shomer on the other, and both the gulfs of the Red Sea, beautifully blue, with the high mountains of Egypt and Arabia respectively beyond.

In this group, and between Jebel ed Deir and Jebel Humr, lies Jebel Músa, or the Mount of Moses. This



SCENE OF THE DELIVERY OF THE LAW.



range is some three miles long, and about one mile in breadth. It is an isolated mass, being cut off from the other mountains on three sides by deep wadys or valleys, and partially on the fourth or south side by two smaller valleys. On it are three prominent points that demand special notice. Near the southern extremity is the Jebel Músa or Mount of Moses, 7359 feet high. About the middle is Mount Horeb, of lesser elevation. And, at its northern end is Ras Sufsafeh,* a bold headland surmounted by two peaks, which abruptly and almost perpendicularly terminates the range. Curving along the foot of this stupendous promontory is the wide valley of Rahah, presenting an open and even space, two miles long, and half a mile wide, gently sloping down to the very base of the mountain. From the southern side of this natural and magnificent amphitheatre, the two peaks of Ras Sufsafeh rise precipitously to the height of 2000 feet, "standing out in lonely grandeur against the sky, like a huge altar." On this plain, and at the foot of this high altar, both ancient tradition and modern research have fixed the scene of the thousands of Israel assembled to receive the Law at the mouth of God. The members of the Ordnance Survey Expedition were unanimous in this conviction. "No place could be conceived more suitable," says F. W. Holland, one of their number, "for the assembling of such a multitude of people both

* The three summits—Mount Moses, Mount Horeb, and Ras Sufsafeh—though they have distinct names, are one and the same mountain mass, which in Scripture is sometimes called Sinai, and sometimes Horeb.

to witness the thunderings and lightnings and the cloud upon the mountain, and to hear the voice of the Lord God when he spake to them."*

The third and northwestern cluster of mountain peaks in this peninsula is that of Jebel Serbal. In massive ruggedness and in boldness of figure and outline, this presents an aspect of grandeur unrivalled among all the peaks of Sinai, and of which Dean Stanley gives the following graphic description: "It is a vast mass of peaks, which, in most points of view, may be reduced to five. These five peaks, all of granite, rise so precipitously, so column-like, from the broken ground which forms the root of the mountain, as at first sight to appear inaccessible. But they are divided by steep ravines, filled with fragments of broken and fallen granite. The highest peak is a huge block of granite," 6734 feet above the level of the sea, "on this, as on the back of some petrified tortoise, you stand and overlook the whole peninsula of Sinai. Every feature of the extraordinary conformation lies before you; the wadys coursing and winding in every direction; the infinite number of mountains like a model; their colors all as clearly displayed as in Russegger's geological map; the dark granite, the brown sandstone, the yellow desert, the dots of vegetation along the Wady Feirân, and the one green spot of the Palm Grove of Rephidim. While descending, night came on; it was a beautiful sight to see on our way the mountains lit up from top to bottom

* *Recovery of Jerusalem*, p. 411.

with the red blaze which shot up from the watchfires of the Bedouin tents. So they must have shone before the Pillar of Fire."*

Jebel Serbal, being the most majestic mountain in the peninsula, has often contended both in ancient and modern times for the distinction of being "The Mountain of the Law," but the investigations of the late Ordnance Survey Expedition have extinguished its pretensions, and proved Ras Sufsafeh to stand unrivalled in its claims to that honor.

The wadys that divide and wind among the mountains of Sinai are in general dry valleys. Of these some are narrow and enclosed by lofty and perpendicular rocks, like that of Rephidim, now named Wady Aleyat; some are favorable for travelling and encampment, like Wady Feiran; while many of them are the channels of occasional torrents, and a wilderness of boulders, which render them impassable to man or beast. Wadys have been not inaptly called *dry rivers*.

The great want of this whole country is water; rain falls comparatively seldom; yet heavy showers do sometimes occur, and on such occasions, in consequence of the barren and rocky character of all the mountains, the rain immediately runs down, and flows together from their impervious sides, as it does from the roofs of houses, thus producing sudden and often destructive torrents. Rev. F. W. Holland, in the winter of 1867, was an eye-witness of one notable such occurrence. I was encamped

* *Sinai and Palestine*, pp. 71, 73.

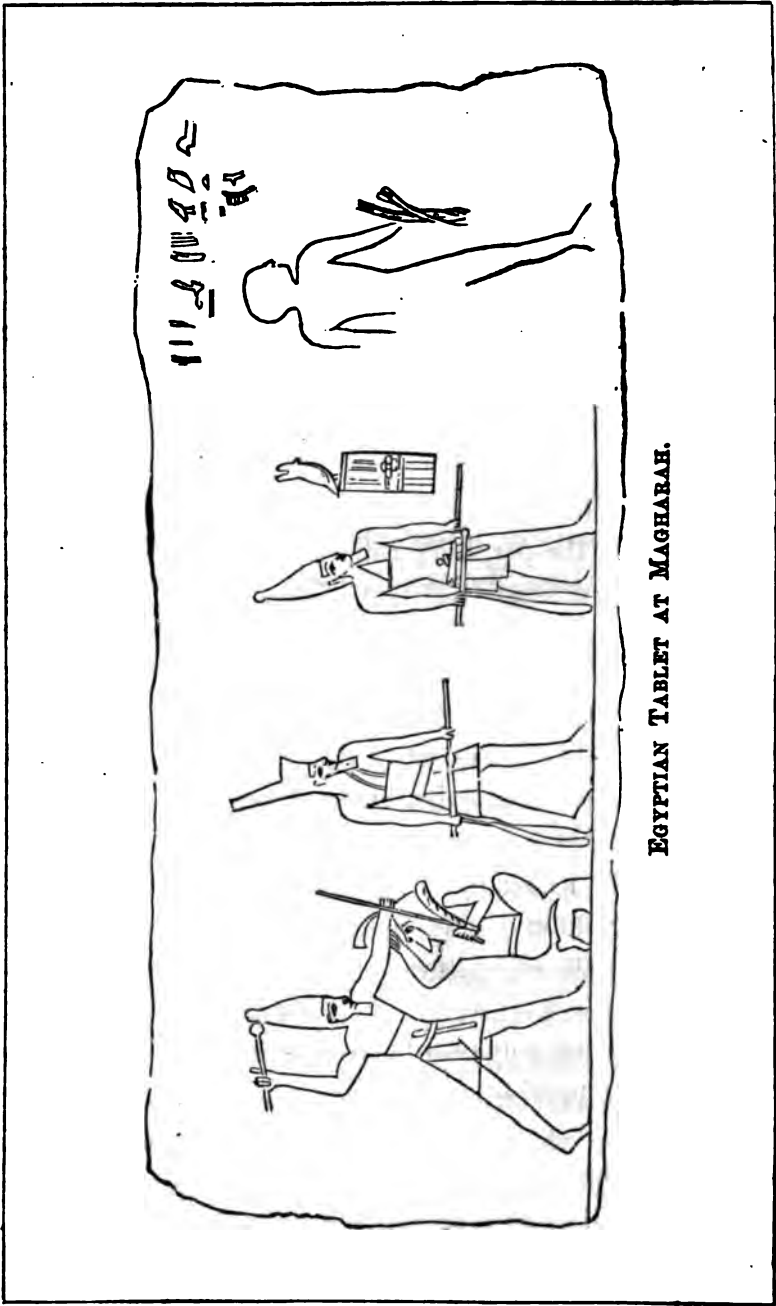
in Wady Feiran, says he, near the base of Jebel Serbal, when a tremendous thunder storm burst upon us. After a little more than an hour's rain, the water rose so rapidly in the previously dry wady that I had to run for my life, and with great difficulty succeeded in saving my tents and my goods; my boots, which I had not time to pick up, being washed away. In less than two hours a dry desert wady, upward of 300 yards wide, was turned into a foaming torrent from eight to ten feet deep, roaring and tearing down, and bearing everything before it—tangled masses of tamarisks, hundreds of beautiful palm-trees, scores of sheep and goats, camels and donkeys, and even men, women, and children; for a whole encampment of Arabs was washed away a few miles above me. The storm commenced at five o'clock in the evening; and at half-past nine the waters were rapidly subsiding, and it was evident that the flood had spent its force. In the morning a gently-flowing stream, but a few yards broad, and a few inches deep, was all that remained of it. But the whole bed of the valley was changed. Here, great heaps of boulders were piled up, where hollows had been the day before; there, holes had taken the place of banks covered with trees. Two miles of tamarisk-wood which was situated above the palm-groves had been completely washed away, and upward of a thousand palm trees swept down to the sea. The change was so great that I could not have believed it possible, in so short a time, had I not witnessed it with my own eyes."*

* *Recovery of Jerusalem*, p. 425.

The mountains of the Sinaitic group are composed of the same material from base to summit—granite, mostly bright red granite; this is often intersected, however, with veins of greenstone, and especially porphyry. There is, indeed, what may be called a porphyritic dyke, which runs from northeast to southwest across the entire mass of mountains. As we leave the great elevations of Sinai, and proceed northward, its exclusive granitic character is gradually lost; large masses of porphyry occur; this presently becomes mixed with greenstone, and toward the northwest gives place to syenite. As the syenite and the porphyry run into each other by imperceptible transitions, it is to be inferred that they are of a contemporaneous origin.

Advancing still northward, we presently come to the sandstone belt before described; this flanks the entire northern frontier of the Sinai mountains. It is, however, a comparatively narrow belt, but runs, curving toward the north, clear across the whole peninsula. Within the limits of this belt only is sand, to any depth, to be found in the whole wilderness. Both the sand and the sandstone rock, like the granite, are of a reddish hue, which gives a peculiar richness to the landscape when surveyed from a distance.

This sandstone district is remarkable for the extensive turquoise mines which were worked by the ancient Egyptians in the neighborhood of Wady Mughârah and Serabit el Khadim. Here still remain numerous hieroglyphic tablets, recording the names and titles of the kings under whose auspices they were worked, together



EGYPTIAN TABLET AT MAGHARAH.

with other archæological relics of the highest interest and antiquity. Hamite iron, magnese, and copper ores, also appear to have been worked in this sandstone district; but the largest workings of copper discovered have been in the granite near Wady Senned, about eight miles northeast of Jebel Musa. Here a vein of ore, which crops up to the surface, has been worked almost continuously for a distance of nearly two miles. Traces of copper smelting have also been found in the valleys of Shellal, Nasb, Mughârah, Senned, and on the coast of the Gulf of Akabah. Far to the northwest, in the Valley Gharundel, slags from copper smelting have likewise been observed. Iron ore was probably worked at Jebel Hadid (Iron Mountain), about ten miles southeast of Jebel Musa. Thus smelting operations have been carried on over a large area of the peninsula, and we have historic evidence that some of these mines were worked by the Egyptians long before the Israelites marched through the wilderness.—From all this we can readily understand, what has been a mystery to many, whence that people in their wanderings might have obtained the metallic materials necessary for the manufacture of their arms and tools, and to construct the holy tabernacle with its vessels and utensils.

As we advance northward across the sandstone belt, our course is a gradual descent till we reach its limit, where rises sharply above it, like a mountain's side, the edge or outcrop of the great limestone bed, which overlies the sandstone, and constitutes the Badiet et Tih, or "Desert of the Wanderings." This escarpment in some places

rises to the height of 4000 feet, and from below has all the appearance of a mountain; it begins far northwest, and appears opposite the Gulf of Suez, but at the distance of some ten or fifteen miles from it, where it is called the Mountains of Rahah; from thence it continues in a southeasterly direction, gradually departing from the gulf through an extent of some seventy miles; it now turns and takes an easterly course under the name of the Mountains of Tih; again it curves and runs in a northeasterly course, keeping to the west of Wady Arabah as far north as the parallel of Mount Hor. Thus this bold and remarkable bluff, which constitutes the southern line of the desert of Tih, describes a complete semi-circle. Mounting this from the south, we at once stand on the vast Table Land of Tih, which has an average elevation above the sea level of about 2500 feet. Its general aspect is that of featureless hills of blanched desolation.

This limestone Table Land, *Badiet et Tih*, extends from the sandstone flank of Sinai, on the south, all the way to the borders of Canaan, on the north; and from the frontier of Egypt, on the west, to the Valley of the Arabah, on the east; and thus covers more than three-fourths of the whole of Arabia Petrea. It was mainly in and along the eastern borders of this desert land that the Israelites spent the last thirty-eight years of their wanderings.

Let us now return to the Peninsula, or the Desert of Sinai proper, within whose borders the children of Israel passed the first fifteen months after leaving Egypt, and

where the question of *Subsistence* presents its greatest difficulty.

This tract of country, as we have just seen, has now been thoroughly explored—has, indeed, been accurately surveyed and mapped. Professor E. H. Palmer, who accompanied the Ordnance Survey Expedition, spent nearly a whole year in this work. During that time he travelled on foot, as the Hebrews must mainly have done, the whole region of their exodus and wanderings—traced every wady along which their herds and flocks must have grazed, examined nearly every spring and pool and rivulet whence they could have drunk, and ascended every eminence upon which Moses and Aaron could have stood. The result of all has been a gratifying confirmation of the accuracy and truthfulness of the Mosaic history.

“Although the general aspect of the country,” says Professor Palmer, “is one of sheer desolation and barrenness, it must not be supposed that there is no fertility to be found there. There are no rivers, yet many a pleasant rivulet fringed with verdure may be met with here and there, especially in the romantic glens of the granite district. At Wadies Nasb and Gharandel are perennial, though not continuous, streams, and large tracts of vegetation. At that part of Wady Feiran where the valley contracts in breadth and concentrates the moisture, we find the most considerable oasis in the Peninsula; and behind the little sea-port of Tor, also, where a depression in the great alluvial plain of El Gaah collects the moisture, there exists a large and magnificent grove of date-palms.

"Besides these, the more fertile spots produce thorns, acacia, tamarisk, sidr, and other trees, while most of the valleys contain some vegetation; in the highlands, myrrh, thyme, and other fragrant herbs; and in the plains, broom, mallow, and countless plants on which the camels feed. Even the barest and most stony hill-side is seldom entirely destitute of vegetation; and the Jericho rose, an extraordinary bibulous plant, which has the faculty of expanding when placed in water after lying in a cabinet for years, may be seen on the most unpromising spots. Many of the less frequented wadys, too, especially those which run down from the great granite clusters of mountains, are watered by pleasant streams, and teem with natural vegetation. The old monkish colonists of the place availed themselves extensively of the advantages afforded by these spots to plant gardens and olive-groves, many of which remain to the present day."*

In Professor Palmér's interesting book we meet, throughout, with such touches of description as the following: "Well watered"—"a beautiful gorge filled with palms and tamarisks, and a clear bright stream running in its bed"—"We came presently to the wady where the tall graceful palm-trees afforded a delicious shade, fresh water ran at our feet, and, above all, *bulbuls* flitted from branch to branch, uttering their sweet notes"—"A large and comparatively fertile tract"—"a lovely valley through which ran a clear cool stream bordered

* *Desert of the Exodus*, pp. 33, 34.

by a grove of palm-trees"—"A grove of palm-trees lining the main bed of the valley, and a gentle stream flowing past their stems added greatly to the beauty of the scene"—"From this we descended into a lovely glen, between precipitous cliffs, and paved with smooth white granite; along this there flowed a murmuring stream, which ever and anon, as it trickled over some larger rocks, formed itself into a deep pool or tiny waterfall, overshadowed by fantastic rocks, and graced with ferns and desert herbage of the richest green"—"Tall wavy rushes, with feathery heads, grew to the height of twelve or fourteen feet, at intervals along the way"—etc., etc. From such descriptions as these it is very evident, that the Wilderness of Sinai is not so destitute of either vegetation or water as it has often been represented by those anxious to find difficulties or to create doubts, as to the credibility of the Bible history.

The Rev. F. W. Holland, Fellow of the Royal Geographical Society, who travelled this Desert Country in 1867, and again as a member of the Ordnance Survey Expedition in 1869, made the following statements in an interesting paper read before that Society: "The lower portion of Wady Ghurundel is one of the most fertile in the whole peninsula. It is nearly three hundred yards broad in many places, and thickets of tamarisks, palms and beds of bulrushes and reeds abound, and wild ducks, with many kinds of smaller birds, frequent the pools, formed here and there by a clear stream of running water, which never fails. . . . Water is not nearly so scarce in the granitic district as most travellers

have supposed. There is also a far greater amount of vegetation than usually described. The basins on the summits of the mountains generally afford good pasturage, and even the mountain sides, which look so barren from the wadys below, are often covered with numerous plants on which the goats delight to feed. Many of the smaller wadys, too, are astonishingly fertile, and in former days, when fairly cultivated by the monks, must have yielded abundance of fruit, vegetables, and even corn, for I found traces in several spots of terraced plots evidently laid out for growing corn. . . . In Wady Ilak alone, in addition to a fine grove of olives near the ruins of an old monastery, there is for *three miles* a constant succession of gardens, each garden having in it two good wells which never fail, and producing olives, pears, apples, vines, figs, palms, nebk, carroub, apricot, mulberry, pomegranate, and poplar trees; while above and below these gardens runs a stream of water which affords here and there a pool large and deep enough to swim in."

The foregoing facts, in the opinion of the authorities who give them, offer abundant proof that the natural resources of the Wilderness of Sinai, at the present day, are capable of supporting a very considerable population.

But this is not all. The investigations of the Ordnance Survey Expedition have served to establish the further truth, that anciently, or at the date of the Exodus, this region must have been capable of supporting a *far larger population* than at present. The evidence is clear and conclusive, that since that period this

region has undergone a change very much for the worse. At present, timber of any kind is scarce, indeed a single large tree (excepting palm and tamarisk) is a notable object; but the time has been when the peninsula was well wooded. This fact is evinced by *the remains of great mining operations*, once carried on here; again and again the explorers came upon vast heaps of "slag," the refuse of great smelting works, long ages since abandoned. These heaps of slag imply a former abundance of fuel, and this fuel could have been nothing else than the wood growing in their neighborhoods, for this was the only supply that could be obtained. The summits of the mountains then as now were doubtless bare, but their sides and the valleys between them must have been clothed with forests. In carrying on these smelting operations, vast quantities of wood must have been consumed; for, as is well known, a single furnace in a short period will eat up the forest for miles around it. The destruction of the forests in this peninsula for this purpose commenced at a very early period, in the second Egyptian dynasty it is said, a period long anterior to the Exodus of the Hebrews; and the destruction went on for many centuries after that event—went on probably till the country was clean despoiled of its timber, and the mines had to be abandoned for lack of fuel.

Now forests play an important part in the economy of Nature; and their destruction in a mountainous country, such as this, is invariably followed by two evils—one to the soil, the other to the climate.

While the steep sides of mountains are covered with

trees, their intertwining roots serve to hold and retain the soil there, against the action of heavy showers or sudden floods, and cause a large amount of the rain that falls to percolate slowly and beneficently through it toward the lower parts; but destroy these forests and you destroy the bonds that hold together and hold in place the soil, and a process of denudation commences, which, in time, will inevitably leave those hill-sides bare rocks. In this very way many of the hills of Palestine, and various portions of the Alps, are known to have been reduced to hopeless barrenness. And this, without doubt, is what has been going on for ages in various parts of the peninsula of Sinai.

Forests, also, have much to do in deciding the amount of rain that shall fall on a district of country. The cool foliage of extended forests condenses the atmospheric moisture, which would otherwise pass on with the aerial currents. Nothing in physical geography is better established than that the destruction of forests, in any region, diminishes the amount of rain-fall, and that fertility depends upon this. It has been the destruction of the forests, more than any other one cause, that has within a few centuries transformed those countries of Africa along the Mediterranean Sea, once the granary of the Roman Empire, into mere unproductive deserts.

Now, this twofold evil, denudation of soil and diminution of rain, has undoubtedly followed the destruction of the forests of Sinai; and hence we can readily understand how that in the course of a period of more than 3000 years the general character of that region must

have been changed, so that its present condition gives but an inadequate idea of what it once was. We have sufficient reason to believe, therefore, that at the period when the Israelites spent their fifteen or eighteen months in this peninsula, the capacity of the country to support both men and beasts must have been far greater than it is now found to be. Indeed, the Report of the Ordnance Survey Expedition goes to show that at all the localities where the Mosaic History places the Hebrews in this Wilderness, there is no reason to doubt that the physical resources of those localities, so far as identified, were abundantly sufficient to justify all that is related of them. The alleged physical impossibility of the Israelites and their flocks and herds finding the means of subsistence during their stay in this wilderness we consider, therefore, as having been at length fully disproved. And it is equally wonderful and gratifying to observe how the apparent difficulties, which so long beset the Sacred Narrative, have thus melted away as our acquaintance with the country has become thorough and complete.

The explorations of this Expedition have served not simply to refute sceptical objections, but also to furnish much positive confirmation of the Bible History. The general route of the Israelites has been traced out, and not a few of their halting-places clearly identified. In many countries it would be impossible to fix upon one road to the exclusion of all others; but owing to the peculiar formation of this region, the explorers were enabled to decide with no little certainty the whole course taken

from Egypt to Sinai. The scene of Miriam's "song of triumph over Pharaoh and his hosts," the "Wilderness of Shur," the line of "the three days' journey without water," the bitter springs of "Marah," the sweet "wells of Elim, with their palm-trees," the "encampment by the Sea," the "Wilderness of Sin," the defile of "Rephidim," the way followed to "pitch in the wilderness of Sinai," and the mount from which God proclaimed his holy Law—all these were identified, and were found to accord exactly with the simple and concise account given in the Bible.

"We are thus able," says Professor Palmer, "not only to trace out a route by which the children of Israel could have journeyed, but also to show its identity with that so concisely but geographically laid down in the Pentateuch. We have seen, moreover, that it leads to a mountain answering in every respect to the description of the Mountain of the Law; the chain of topographical evidence is complete, and the maps and sections may henceforth be confidently left to tell their own tale."*

"Not a single member of the expedition," says Mr. Holland, "returned home without feeling more firmly convinced than ever of the truth of that sacred history which he found illustrated and confirmed by the natural features of the desert. The mountains and valleys, the very rocks, barren and sunscorched as they now are, seem to furnish evidences, which none who behold them can gainsay, that this was that 'great and terrible wilderness' through which Moses, under God's direction, led His people."†

* *Desert of the Exodus*, p. 228.

† *Recovery of Jerusalem*, p. 429.



PHYSICAL GEOGRAPHY

AND

THE LAND OF PROMISE.

There is no district on the face of the globe containing so many and such sudden transitions as Palestine, being at once a Land of mountains, plains, and valleys. It unites different climates under the same sky, and collects within a small compass the pleasures and productions which nature has elsewhere dispersed at great distances of time and place.—VOLNEY.

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CANAAN A LAND CHOSEN OF GOD: WESTERN PALESTINE: EASTERN PALESTINE: VALLEY OF THE JORDAN: THE DEAD SEA: REASONS FOR THE CHOICE OF THIS LAND—1. ITS ISOLATION; 2. SUITABLENESS OF ITS PHYSICAL STRUCTURE TO EDUCATE THE CHOSEN PEOPLE; 3. ITS FITNESS TO BE THE BIRTH-PLACE OF THE BIBLE; 4. ITS CENTRAL POSITION, AS TO THE THREE CONTINENTS.



PHYSICAL GEOGRAPHY

AND

THE LAND OF PROMISE.



MANKIND having for the second time all but universally corrupted their way, in departing from the True and Living God, it became necessary, if the knowledge and worship of Him were to be preserved in the world, to resort to a different and more effectual method than had hitherto been followed for this end. The plan now adopted by the Most High, as observed in a previous chapter, was to choose a Man, and in him his descendants after him as a nation, to be His witnesses upon the earth—to be the depositaries of the historic and preceptive truths already made known, and of the prophetic truths and promises yet to be accomplished in the coming and Kingdom of Messiah. The person on whom this choice fell was Abraham, the son of Terah, whose native place was Ur, of the Chaldees.

“Now the Lord said unto Abraham, Get thee out of

thy country and from thy kindred, and from thy father's house, unto a land that I will show thee: and I will make of thee a great nation, and I will bless thee, and make thy name great; and thou shalt be a blessing: and I will bless them that bless thee, and curse him that curseth thee: and in thee shall all families of the earth be blessed. So Abraham departed as the Lord spake unto him; and Lot went with him: and Abraham was seventy and five years old when he departed out of Haran. And Abraham took Sarai his wife, and Lot his brother's son, and all their substance that they had gathered, and the souls they had gotten in Haran; and they went forth to go into the Land of Canaan, and into the Land of Canaan they came. And the Lord appeared unto Abraham, and said, Unto thy seed will I give this Land.*

From this passage of sacred history, it plainly appears that God himself made choice, not only of the family that should become the depositaries of his truth, but also of the Land in which they should dwell. The place of their habitation, no less than their office of sacred trust, was of Divine appointment. "Get thee into a land that *I will show thee*—Unto thy seed *will I give this Land*." Canaan, therefore, became the abode of the seed of Abraham, not by his choice or their valor, but by the express appointment of God; He chose their inheritance for them—pointed out to them this country as the Land He had of old prepared for them, and promised in the fulness of time to put them in possession of it. This

* *Genesis* xii., 1-7.

fact underlies the whole Scripture history of this people; and any attempt to disprove or deny it is an attempt to sap the foundations of that sacred record.

The enemies of the Holy Book know this, and have not been slow to make such attempts. To them Abraham is but a Chaldean adventurer, and his "call" but the dream of fanaticism or the pretence of imposture. And they can see in his descendants, the people that were led by the cloudy pillar in the day and by the column of fire in the night through "the great and terrible wilderness" to take possession of that Promised Land, nothing more than a predatory horde, invading the territories of tribes less powerful than themselves, and by deeds of violence and blood robbing them of their flocks and herds and rightful homes. They scoff at the idea that God either made choice of the Land, or promised or gave it to them. If the Lord, say they, had been disposed to select a country for a favorite people, he could readily have found a hundred others in all respects infinitely more desirable than the little isolated and rocky territory of the Canaanites. They can see nothing in the situation or character of that country to determine or to indicate such a Divine choice. They therefore deny it.

While it is not for us to enter into the counsels of the Almighty, nor to pronounce on all the ends secured by the steps He takes, yet, many times, when his plans have been carried out, and his work completed, we may be able to discern something of the wisdom of his course and of the beneficial results attained. This is true of _____ and we shall under-

take in this chapter to show that the Land of Canaan, by its geographical position, by the peculiarity of its environments, by its remarkable contour and consequent diversity of soil and temperature, was preëminently adapted for the home of God's peculiar people, and for the carrying out through them of his gracious purposes toward the whole human family. To do this will require us to present a concise view of the PHYSICAL GEOGRAPHY of this Land and its surrounding region.

WESTERN PALESTINE.

THE Mediterranean Sea, at its eastern extremity, terminates in a straight shore line of some 400 miles extent, and running nearly in a north and south direction. Along the southern half of this shore lies the Promised Land, or Canaan or *Palestine*, as it is now commonly designated. Its length runs in the same direction as the shore, and is 140 miles; and its breadth, including the territories of Reuben, Gad, and the half of Manasseh, which lay to the east of the Jordan, measures about 60 miles. Nearly parallel to the coast, and at the average distance of 40 miles from it, the river Jordan, as the main artery of the country, flows from north to south through its entire length.

From the borders of Asia Minor there run southward, parallel to the Mediterranean shore and to one another, two ranges of mountains, both celebrated in ancient history. Of these, the western, after passing through numerous elevations and depressions, at length gathers in its strength, and lifts itself high and steep to form the

fact underlies the whole Scripture history of this people; and any attempt to disprove or deny it is an attempt to sap the foundations of that sacred record.

The enemies of the Holy Book know this, and have not been slow to make such attempts. To them Abraham is but a Chaldean adventurer, and his "call" but the dream of fanaticism or the pretence of imposture. And they can see in his descendants, the people that were led by the cloudy pillar in the day and by the column of fire in the night through "the great and terrible wilderness" to take possession of that Promised Land, nothing more than a predatory horde, invading the territories of tribes less powerful than themselves, and by deeds of violence and blood robbing them of their flocks and herds and rightful homes. They scoff at the idea that God either made choice of the Land, or promised or gave it to them. If the Lord, say they, had been disposed to select a country for a favorite people, he could readily have found a hundred others in all respects infinitely more desirable than the little isolated and rocky territory of the Canaanites. They can see nothing in the situation or character of that country to determine or to indicate such a Divine choice. They therefore deny it.

While it is not for us to enter into the counsels of the Almighty, nor to pronounce on all the ends secured by the steps He takes, yet, many times, when his plans have been carried out, and his work completed, we may be able to discern something of the wisdom of his course and of the beneficence of the results attained. This is true of the subject now before us; and we shall under-

feet high. From this the range gently declines, increasing in breadth as it diminishes in height, till it is suddenly cut in twain by a tremendous gulf, rivalling in depth and grandeur the famed cañons of the Rocky Mountains. The river Leontes (now Litány) after flowing for more than a hundred miles in a southerly direction along the eastern flank of Lebanon, takes a turn westward, forcing its way across through the heart of the mountain declivity; the cleft is very narrow, and the rocks rise perpendicularly on either side, sometimes to the height of ten or twelve hundred feet. The stream, like a furious monster chained at the bottom of the sunless chasm, writhes and roars; at this point whitened with foam, and at that hidden from view by overhanging trees, whose branches meet and intertwine. At length it escapes from its rocky prison into the Plain of Phenicia, through which it passes with a gentler flow, and finally discharges its waters into the sea, a little above Tyre.

This enormous cleft of the Leontes forms the northern boundary of the Land of Israel. Southward from this the Lebanon Range spreads itself more diffusely, forming by its many offshoots the uneven but fertile and beautiful district of Northern Galilee, where "Asher dipped his foot in oil," and Naphtali, like a spreading terebinth, "put out goodly boughs." About the parallel of Nazareth, the general surface slopes and sinks into the rich expanse of Jezreel, now called the Plain of Esdraelon, on the northern verge of which stands the dome-like Tabor, the witness and memorial of many

in its higher elevations an average of some 2500 feet above the level of the sea. Gerizim is 2675 feet; Jerusalem, 2600 feet; Mount of Olives, 2725 feet; Bethlehem, 2700 feet; and Hebron, 3030 feet above the sea. From several of these summits remarkably extended and clear views of the surrounding country may be obtained.

The mass of hills which thus runs along and occupies the centre of the country is bordered by low and level lands on both sides. On the west this low border forms successively the rich maritime plains of Acre, Sharon and Philistia, which range from ten to sixteen miles in



PROFILE ACROSS—JAFFA TO MOAB.

width. On the east, the hill region descends more abruptly into the profound Valley of the Jordan, which, from the Lake of Galilee down to the neighborhood of Jericho, has an average breadth of some six or seven miles, and from thence to the Dead Sea of about twelve miles. Through these alluvial lands various little streams course their way from the hills, to the river on the one hand, or to the sea on the other.

The present condition and appearance of the largest portion of Western Palestine, the region we have now surveyed, is bare, sterile and forbidding. Often not a grove, not a tree, not a cultivated spot, nor a human

habitation is to be seen within the compass of miles. Vast tracts are apparently incapable of cultivation, being covered with small gray stones; while many of the rounded hill-sides exhibit little else than denuded rocks. The contemplation of the barren and cheerless scene fails not to suggest the question, "Can these stony hills, these deserted valleys, be indeed the Land of Promise, the land flowing with milk and honey?" But we are not to judge of the appearance, or of the resources, of this land in ancient days by what we see of it in our own. It is now, and long has been, a country fallen, ruined, blighted. The wars, the anarchy, the oppression, and the barbarism of numerous and successive centuries, have completely changed the whole face of the country. Those naked and stony ridges were once waving woodlands; we read of the forest of Hamath and of the Wood of Ziph, within the borders of what is now *bare* Judea; Kirjath-Jearim was "a city of forests;" and even on the naked hills of Benjamin there was the Forest of Bethel, the haunt of the bear and the covert of the lion. Those rising slopes, now little more than naked rocks, were in former days terraced and overspread with ample soil, hanging with olives and clustering with grapes. And in those localities, now dreary and deserted, the pastures were once clothed with flocks, the valleys also were covered over with corn, while the happy population shouted for joy, they also sang.

In proof of all this, abundant evidence still remains, not only in the statements of Scripture and the testimony of profane history, but also in the vestiges of ruined

greatness which are strewn over the face of the whole land. The ruins of villages, or fortresses, or cities, which cover nearly all the hill-tops of the country, attest the greatness of both the population and productiveness of the land in former ages. From Dan to Beersheba, and from the River to the Sea, old foundations, prostrate walls, broken cisterns, crumbling terraces, the sites of oil and wine presses, ruined sheep-folds, crumbling watch-towers, dry conduits, etc., remain as silent witnesses of the numerous flocks, rich vintages, and abundant harvests which once supported busy millions, where now but here and there a traveller is seen.

We are not, however, to conceive of the country as being altogether an unmitigated desert, even at the present day; it still retains in many localities sufficient richness to vindicate its ancient claims to be "a land of wheat and barley, and vines and fig-trees, a land of wine and oil and honey." In the Vale of *Eschol* and on the heights of *Urtás* are now produced the finest grapes in the world, whilst the environs of *Hebron*, *Bethlehem*, and *Jerusalem* can boast of the richest fig and almond and olive groves in all the East. The *Valley of the Jordan* is rich in soil and tropical in climate; the plains of *Jericho*, now as of old, by proper tillage might be made "as the garden of the Lord." The undulating expanse of *Sharon*, for many miles, is a vast and beautiful garden, producing the most delicious oranges, lemons, plums, apricots, bananas, etc. The *Plain of Philistia*, one might say, is one enormous grainfield, yielding prodigious crops of wheat, rye, barley, etc., from year to year, and from

century to century, without manure, without irrigation, and without any of the appliances of modern agriculture. *Shechem* is described by Dean Stanley as "the widest and most beautiful of the plains of the Ephraimite mountains—one mass of corn, unbroken by boundary or hedge—from the midst of which start up olive-trees, themselves unenclosed as the fields in which they stand; on the western side opens a valley, green with grass, gray with olives, gardens sloping down on each side, fresh springs running down in all directions; at the end, a white town embosomed in all this verdure, lodged between the two high mountains, which extend on each side of the valley—that on the south Gerizim, and that on the north Ebal—this is the aspect of Nablous (ancient *Shechem*), the most beautiful spot in central Palestine." Farther north still is the famed *Plain of Esdraelon*, twelve miles broad, and stretching almost from the Mediterranean to the Jordan, the aspect of which in springtime is said to be that of "a vast waving corn-field," through which flow the several streams whose waters unite to form the river Kishon. "Every traveller has remarked on the richness of its soil—the exuberance of its crops. Here the Palm once more appears, waving its stately tresses over the village enclosures. The very weeds are a sign of what in better hands this vast plain might become." *Galilee* may be called a fine district of country; the northern portion of it is beautifully wooded with dwarf oak, intermixed with tangled shrubberies of hawthorn and arbutus; the whole is varied by fertile upland plains, green forest glades, and

wild picturesque glens, and is still the home of a numerous and industrious population.

Such are the dimensions, the outlines, and the main physical features of Western Palestine. We now cross over to take a similar survey of

EASTERN PALESTINE.

WE take our starting point from ANTI-LEBANON, the eastern of the two mountain ranges coming down from the north, mentioned at the beginning of this description. This is generally somewhat inferior in height to Lebanon, and from which it is divided by the fine and fertile valley of Coele-Syria, the Tetrarchate of Abilene. This chain attains its greatest altitude in the majestic Hermon, whose summit stands 9800 feet above the level of the sea. "While Lebanon is wooded or clothed with verdure to within one thousand feet of its summit, Hermon and its cluster of satellites are for the most part bare, excepting in the thin threads of verdure which mark the course of the streams which drain them, and the forest does not climb more than a few hundred feet up the mountain side." It is, however, a noble dome; from its top one can look down upon the whole Land of Palestine, almost as upon an extended map. On the other hand, the snowy crown of this mountain is clearly visible from the Plain of Phenicia, from Bashan, from Judea, and even from the bed of the Dead Sea. And whencesoever its icy crest is seen, in summer, when the firmament around it seems to be on fire, it presents an object of indescribable grandeur.

To the east and southeast of Hermon extends the rugged region of Trachonitis, which is unmarked by any special elevations in the form of hills, but is furrowed by innumerable and fantastic ravines, apparently of volcanic origin. Its whole aspect is exceedingly dreary.

From Hermon southward the mountain range continues its course to the east of the Jordan, and parallel to it, rising successively to the historic heights of Ajlun, Gilead and Moab, which, with their intervening connections, bound, like a solid purple wall, the whole eastern horizon. The pine-clad summit of Ajlun stands 6500 feet above the sea; that of Mount Gilead a little less. Of the Moab division of the range, Mount Nebo (of which Pisgah is a peak) forms the highest point, being 4600 feet. From Moab the chain continues southward, till it culminates in Mount Hor, whose elevation is a little over 5000 feet. From this point it declines in height, but preserves its continuity along the eastern side of the valley of the Arabah until it reaches the Elanitic Gulf.

Of this trans-Jordanic region, H. B. Tristram, who visited it a few years since, gives the following account: "Although the mountain range is quite as high as the hills of Western Palestine, it is not so broken up. Only four streams of any size furrow it: the Yarmuk, the Jabbok, the Callirhoe, and the Arnon. To the east the hills gently melt away into the immense red plain which reaches the Hauran or Bashan, the farthest possession of Manasseh, after the hills of which, the Assyrian Desert begins. In the north we find an open plain eastward, extending to the Lejah (Trachonitis), and

farther Bashan, and westward the range is dotted with noble oaks, rather park-like than in the form of dense forest, deciduous in the lower grounds, and evergreen on the higher ranges. Among these roam the flocks and herds of the wandering Bedouin.

“Next, in Gilead, we come to a more densely-wooded region, a true forest in places, the tops of the higher range covered with noble pines; then a zone of evergreen oaks, with arbutus, myrtle, and other shrubs intermixed; lower down, the deciduous oak is the predominant tree, mixed with wild olive, and many other semi-tropical trees, which, in their turn, yield, as we descend into the Jordan valley, to the jujube, the oleaster, and the palm. But in all these forests are open glades and dells, where corn is grown or olives planted, and the streams are fringed with oleander. Such must have been the appearance of the neighborhood of Shechem and Bethel in the days of the patriarchs.

“Farther south, the regions of Ammon and Moab are, for the most part, without forest, the trees being principally terebinth, scattered here and there over a region of fine turf, well watered, and still covered with flocks, till we reach the eastern corn-plains of the Belka, now the richest district of Syria. This country, almost in its primitive state, is a picture of what southern Judea and the neighborhood of Beersheba once were, before the denudation of the forests had checked the annual rain-fall. There is a beauty in Gilead, a richness in Moab, and a grandeur in Bashan, which make it hard to believe that only the narrow cleft of the Jordan valley

separates them from the gray hills and naked rocks of Western Palestine."

VALLEY OF THE JORDAN.

BETWEEN the two parallel ranges of mountains now described, or between East and West Palestine, flows the River Jordan, whose channel forms one of the most remarkable features, not only of this country, but of the whole face of the globe. Great interest has been felt from remote antiquity in regard to the source of this river, and this honor has been claimed for three different streams—the Great Jordan, the Lesser Jordan, and the Hasbany; all of these rise in the slopes or rocky sides of Anti-Lebanon, and all meet and mingle their waters in Lake Merom, now Lake Huleh. The Greater Jordan has its origin in a copious fountain that gushes out of a rock behind the modern town of Banias, and its entire length from thence to the lake does not exceed twelve miles. The Lesser Jordan also has its beginning in a spring, which forms a magnificent basin of three hundred feet in diameter, entirely surrounded by shapeless basaltic stones; in the midst of this capacious bowl the water boils and bubbles up in great abundance, sending forth a full-grown stream, thirty feet wide and two feet deep; its whole length, however, is only some five or six miles; it is in fact but a branch of the Greater Jordan. Far up in the mountains, near the village of Hasbeiyah, another beautiful fountain bursts out at the foot of a rocky precipice, in a most romantic and delightful spot, and forms at once the perennial stream of the Hasbany. The

course of this river lies west of the other two; it is much longer than either of them, the distance from its source to the lake being twenty-five miles. Hence the claim of the Hasbany to be the true parent of the sacred river of Palestine rests upon its greater length, whilst that of the Lesser Jordan is based upon its larger volume of water, and of the Greater Jordan on its having received the title and retained the honor from remotest antiquity.

Lake Huleh, in which the waters of these contending streams are collected, is situated in a marshy region, not far from Cæsarea-Philippi. Its length, as lately measured by Lieutenant S. Anderson, R. E., is about four miles, and its width three miles. Its dimensions at certain seasons are considerably larger. Its surface stands nearly on a level with that of the Mediterranean.

Out of this lake, the Jordan passes through a narrow channel between precipitous banks; and, true to the signification of its name, "The Descender," it descends in almost continuous rapids for some eight miles; and after a gentler flow of some three miles more, enters into another lake—the beautiful Sea of Galilee. Than this lake, excepting the Holy City, there is no place in Palestine invested with deeper or more sacred interest to the Christian; everything connected with it, therefore, is carefully and seriously inquired into.

This sea, whose bosom and environments were the scene of most of the Saviour's miracles and teachings, has been pictured in the minds of most readers of the Gospel, but often quite erroneously. In shape, it is somewhat like a pear, with the broad end north. Its

extreme length is thirteen miles, and its greatest width seven miles. Its surface level is 650 feet below that of the Mediterranean. Its surroundings have nothing of a Swiss or Alpine character. "There are here no pine-clad hills rising from the very edge of the lake; no bold headlands break the outline of the shores; and no lofty precipices throw their shadow over its waters; but it has, nevertheless, a beauty of its own, which always makes it remarkable. The hills, except at Khan Minyeh, where there is a small cliff, are recessed from the shore of the lake, or rise gradually from it; they are of no great elevation, and their outline, especially on the eastern side, is not broken by any prominent peak. Everywhere from the southern shore the snow-capped peak of Hermon is visible, standing out so sharp and clear in the bright sky that it appears almost within reach.

"The shore line, for the most part regular, is broken on the north into a series of little bays of exquisite beauty; nowhere more beautiful than at Gennesareth, where the beaches, pearly white with myriads of minute shells, are on one side washed by the limpid waters of the lake, and on the other shut in by a fringe of oleanders, which in the month of May add the charms of their red and bright blossoms to the beauty of the scene."

Encompassed, as this sheet of water is, with rocky and fissured mountains, its shores abound in springs, some of which are sweet, some are brackish, some are sulphurous, and some are quite warm. About a mile

south of modern Tiberias, there are no less than seven distinct springs, varying in temperature from 132° to 142° Fahr. A strong smell of sulphur rises from the water, and as it flows down to the lake it encrusts the stones and rocks with a green deposit.

From the southern end of the Sea of Galilee the Jordan emerges a pure and bright stream, to enter upon the third and last stage of its course. The valley, in prospect below, is broad and verdant, stretching away toward the south, covered in the immediate neighborhood of the lake with luxuriant grass. On the east side, palm trees here and there wave their graceful tops; the oleander everywhere fringes both the river and the streamlets that flow into it; and at different points, tamarisks of peculiar species, and many other trees unknown in the rest of Palestine, crowd the banks.

Lieutenant W. F. Lynch, of the United States Navy, who descended the Jordan in 1847, found its course, though generally of moderate rapidity, yet interrupted frequently by descents that amounted almost to cascades. His boats plunged down no less than twenty-seven threatening rapids, besides a number of lesser note. Its channel is also remarkably tortuous; although the direct distance between the Lake of Galilee and the Dead Sea does not exceed sixty miles, yet its waters, to accomplish this, travel full two hundred miles. While its immediate banks, in many places, are beautified by trees and rich vegetation, and enlivened by the songs of various birds, the more remote cliffs and hill-sides present, for the most part, a wild and cheerless aspect.

When down about a third of the distance between the two seas the American commander gives the following lively description of the scenery: "For hours in their swift descent the boats floated down in silence—the silence of the wilderness. Here and there were spots of solemn beauty. The numerous birds sang with a music strange and manifold; the willow branches were spread upon the stream like tresses, and weeping mosses and clambering weeds, with a multitude of white and silvery little flowers, looked out from among them; and the cliff swallow wheeled over the falls, or went at his own will, darting through the arched vistas, shadowed and shaped by the meeting of the foliage on the banks; and above all, yet attuned to all, was the music of the river, gushing with a sound like that of shawms and cymbals. There was little variety in the scenery of the river; to-day the stream sometimes washed the bases of the sandy hills, at other times meandered between low banks generally fringed with trees, and fragrant with blossoms. Some points presented views exceedingly picturesque—the mad rushing of a mountain torrent, the song and sight of birds, the overhanging foliage and glimpse of the mountains far over the plain, and here and there a gurgling rivulet pouring its tribute of crystal water into the now muddy Jordan; the western shore was peculiar from the high calcareous limestone hills, which form a barrier to the stream when swollen by the efflux of the Sea of Galilee during the winter and early spring; while the left and eastern bank was low and fringed with tamarisk and willow, and occasionally a

thicket of lofty cane, and tangled masses of shrubs and creeping plants, gave it the appearance of a jungle." *

Below Wady Ajlun, or about midway between the Lakes, the same explorer tells us that "the mountains toward the west rise abruptly in naked pyramidal crags; each scar and fissure appearing as palpably distinct as though within reach, and yet are hours away; the laminations of their strata resembling the leaves of some gigantic volume, wherein is written by the hand of God the history of the changes He has wrought."

As the river approaches the end of its career, the banks become low, and the country flat and level, overspread with willows and sedges and tall grass. Shoals and sandbanks now often obstruct the channel, and the current moves more and more slowly. At its mouth, and even some distance before, its waters are salt and acrid, and the dried mud and stones along its verge everywhere are incrustated with deposits of the same character. At the point of disembogement it is 540 feet wide, and three feet deep, as measured by Lieutenant Lynch. Thus this remarkable and sacred stream, after travelling hundreds of miles, and winding through a thousand graceful mazes amid scenes of life and solitude, barrenness and beauty, at length reaches its dismal termination—The Dead Sea.

Sunk as the valley of the Jordan is in this its lowest division, not only below the general surface of the country, but a thousand feet below the level of the sea,

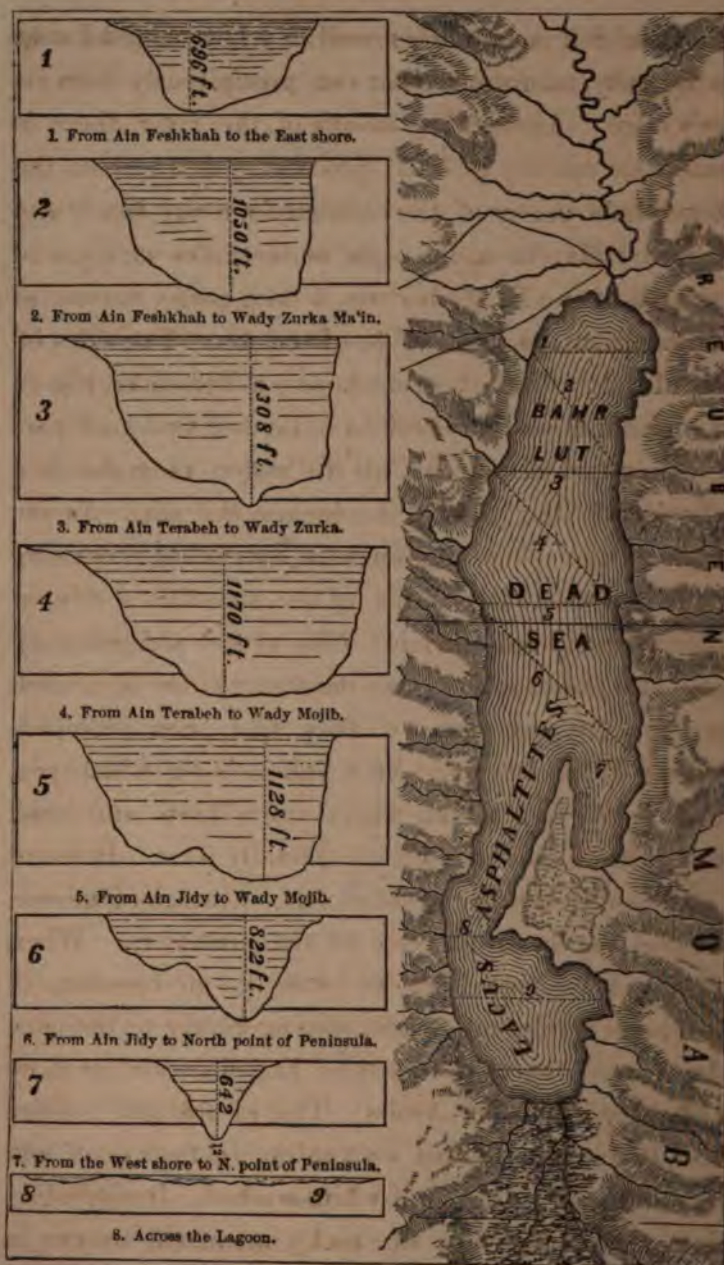
* *Narrative of U. S. Expedition*, p. 212.

its climate is in summer exceedingly hot; and even in winter, snow and frost are here unknown.

THE DEAD SEA.

THE whole valley of the Jordan is a vast and deep trench, dug far down into the crust of the earth, and growing deeper and deeper as it advances toward the south, until in the basin of the Dead Sea it reaches its lowest depth. Here, therefore, are collected and held in a profound and mysterious reservoir the waters of that celebrated stream. This collection of water is a great salt lake, forty-two miles long, and from twelve to sixteen miles wide. Its form is somewhat irregular, being penetrated two-thirds across, at the southeast quarter, by a point of land, called the peninsula of Lisan. In the southern part the water generally is not more than ten or twelve feet deep, while a considerable extent is much less; at one point it is even fordable. At the north end it is much deeper; here the depth ranges from 700 feet to 1100 feet, and at one point reaches the profundity of 1308 feet. (See the sectional views on the next page.) But the most marvellous thing about this sea is the fact that its surface, according to the accurate measurement of Lieutenant Symonds, of the English service, is 1312 feet below the level of the Mediterranean. Hence the bed of this lake is the deepest depression known on the face of any continent of the globe, being 2620 feet below the sea level. The descent from the summit of the Mount of Olives to the Ford of Jordan, near its mouth, is not less than 4000 feet.

SECTIONAL VIEWS OF THE DEAD SEA.



The Dead Sea is closely hemmed in on the east and west sides by lofty mountains that rise precipitously from its water's edge. Around the mouth of the river there is considerable marshy ground; proceeding down along the western shore this soon gives place to a rocky beach and to rugged cliffs; in about eight or ten miles we come to the mouth of the Brook Kidron, a deep gorge, narrow at the bottom, but yawning wide at the top. The sides of this frightful ravine, where it opens upon the lake, rise to the height of more than 1000 feet; the bed for a good part of the year is perfectly dry, all the water being absorbed in the sand long before it reaches the sea. As we advance south, we pass numerous caves, some opening into the face of the rock far up the mountain's side, in positions wholly inaccessible. The shores are generally barren and desolate, and the mountains are of a dark brown hue, appearing as if they had been scorched. Here and there, however, little valleys open which produce a scanty vegetation, where a few birds and some other little animals may be occasionally seen. Proceeding still south, we again observe the openings of numerous caves far up in the face of the precipices. When half way down the shore we come to an opening, or recess, some half a mile wide, sloping gently to the edge of the water—this is the Plain of Engedi, which is more or less tilled by a few Arabs. The stones and pebbles on the beach are covered with saline incrustations, and appear from a distance as if white-washed. Immediately behind this little plain the rocky mountain towers in dark and awful ruggedness, of which Dr. Robinson gives

an interesting account. He set out for the Dead Sea from Hebron, and, travelling due east, reached at length the rocky and wild region of Engedi—David's hiding-place from the deadly hate of Saul. He found it full of caves, and the whole scenery corresponding in every respect with the sacred narrative. As he advanced, the general face of the country descended, his road lying along rough and winding ravines. At length, having, as he supposed, reached the sea level, he came out suddenly upon the brow of a mountain, from which he beheld to his great surprise a broad expanse of water some 1500 feet still below the point on which he stood—it was the Dead Sea. From his position, the northern portion of the sea was hidden by a projecting cliff, but he could look down and survey the whole of the southern half of it, its outlines and islets and peninsula. After remaining here about three-quarters of an hour, he and his party resumed their journey to go down to the shore. "The descent was frightful, the pathway having been formed by zigzags down the sides of the precipice, the necessary width of the track having been obtained by sometimes cutting into the face of the rock and sometimes by means of rude walls built from below. As they looked back up the rocks after they had descended, it seemed to them impossible that any road could have been formed there—and yet so skilfully had the work been planned and executed, that the descent, though terrific, was accomplished without serious difficulty. One of Robinson's companions had crossed the heights of Lebanon and the mountains of Persia, and he himself had travelled all

the principal passes of the Alps, but neither of them had met with a pass so difficult and dangerous as this."

Leaving Engedi, and following the shore, we come at the distance of about a dozen miles to a phenomenon of a different interest from anything we have yet witnessed. West of the southern extremity of the sea, and running nearly parallel with the shore, is Jebel Usdum; this is an extended and prominent ridge of rock salt, about seven miles long, and from one and a half to three miles wide, and varying from 150 to 200 feet in height. It is capped along its jagged top with a mass of gypsum and marl. Along the sides of this hill, in several places, the pure mass of salt breaks out in extended white streaks, or forms perpendicular precipices forty or fifty feet high, and several hundred feet long; these crystalline cliffs, sparkling beneath a tropical sunshine, are very striking and beautiful spectacles. At certain points of the ridge, masses of salt, detached from heights above, have rolled down and are found lying thick along its base where, during storms, the waves wash and dissolve them, to add to the saltiness of the lake; at other points, little springs send forth their streams to percolate among the crags and fissures, and carry with them similar accessions to the briny deep. In one place, such a spring has washed out the saline rock, and formed a remarkable cavern, of irregular form and great extent. Its entrance is twelve feet high and its breadth about the same; it pierces into the mountain a spacious tunnel for nearly 400 feet, and then branches off into two small fissures, which can be traced no farther.

Similar excavations by drainage have been formed under the level beach. "In several places," says Tristram, "we found the ground hollow, and echoing under our feet as we walked by the shore; and in some, the crust has given way, and a laden camel has suddenly disappeared from the file of a caravan, to be salted to death below."

At the head of a deep and narrow chasm, near the centre of this mountain of Usdum, Lieutenant Lynch discovered a remarkable formation of the salt rock, consisting of a round and lofty mass, standing out and nearly detached from the mountain, and presenting on one side the appearance of a tall column. It was, in fact, "a pillar of salt," over forty feet in height, capped with a layer of limestone. The mass, though appearing in front an isolated pillar, yet behind was connected with the precipice by a kind of buttress widening toward the base. This remarkable object stands upon a pedestal some fifty feet above the level of the lake. Josephus relates that the pillar of salt into which Lot's wife was transformed remained in his day, and that he had seen it.* It is not improbable that a distant view of this striking saline formation, aided by a superstitious imagination, supplied all the grounds he had for the bold assertion.

Such is the western shore of the Dead Sea; and the mountains which rise from its eastern side are scarcely inferior in height, or ruggedness, or dread desolation.

* *Antiquities*, Chap. XI., Sect. 4.



LOT'S WIFE.

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Lieutenant Lynch and a part of his company, at the invitation of the Arab Chief of Kerak, ascended this range from a point nearly opposite Engedi. His road lay through a gorge of wild and awful grandeur. The path was steep and narrow and perilous; it literally overhung a deep and yawning gulf, while to unmeasured heights above towered and projected masses of blackened rock threatening destruction at every instant by their impending aspect. The whole scene was one of thrilling grandeur and desolation. To add to the terrific sublimity of their situation, a fearful tempest of thunder and lightning and rain swept over it as our adventurers were ascending; and soon the bottom of the gorge was filled with a rushing and roaring torrent, which came down from the mountain tops, and swept onward with a violence that nothing could resist. At length the party reached the brow of the table-land, 3000 feet above the surface of the lake, and came under the walls of the town of Kerak.

Looking down upon the Dead Sea from such an elevation as this, its waters seem to rest heavily as in a vast caldron, often covered with a leaden-colored mist; while everything around it appears strange and unnatural, and the whole scene wears an expression of mysteriousness and indescribable desolation. Hence, through long ages, this whole region has been dreaded, and shunned as a place accursed of God.

Around the sea are found numerous springs of divers qualities; some pour forth hot water, some sulphur water, and some that which is as strong brine. There are

also at different points wells of bitumen, large masses of which, especially after earthquakes, are seen floating upon its surface. Hence, altogether, the waters of this lake are salty and nauseous in the extreme.

From the abounding impregnation of saline, bituminous, and other matters, the water of the Dead Sea is much heavier than that of the Ocean, and is therefore remarkably buoyant. Common ocean water holds in solution four per cent. of solid salt, but that of this sea holds twenty-eight per cent. If the density of distilled water be indicated by 1, that of mid-Atlantic will be 1.02, and that of the Dead Sea 1.13. Hence, Lieutenant Lynch found that his boats, with exactly the same burden, drew one inch less water when afloat on this lake than they did in the river Jordan. Neither man nor beast can sink in it, but will without effort float upon the surface like cork. Dr. Robinson tells us that he bathed in it, and though he had never learned to swim, he found that in this water he could sit, stand, lie or float in any position without difficulty. And Mr. Montague, somewhat more luxurious in his conceptions, assures us that a man can sit with ease in its waters, and pick a chicken or read a newspaper at his pleasure. Objects seen through this water appear as if seen through oil.

On a calm and hot day the sea sometimes assumes a peculiarly sombre aspect. "The great evaporation encloses it in a thin transparent vapor, its purple tinge contrasting strongly with the extraordinary color of the sea beneath, and where they blend in the distance, giving

it the appearance of smoke from burning sulphur. It seems like a vast caldron of metal, fused but motionless."* In the night, also, the surface of the water, owing to its peculiar qualities, when ruffled, is one sheet of phosphorescent foam, and the waves, as they break upon the shore, throw a sepulchral light upon the near cliffs and scattered fragments of rock along the beach.

No fish or trace of living thing has been discovered in this sea. Some of its water was brought home by the American Commander, which was subjected to examination under a powerful microscope, but no animalcule or vestige of animal matter could be detected in it; so that it has been rightly named—The *Dead Sea*.

Such is the Land of Promise. The view now taken shows it to be a very remarkable country in its physical structure. It embraces within its limits all the great scenic features of the globe—plains and mountains and deserts, fruitful valleys and fearful gorges, the blue sea and tranquil lakes, gushing fountains and flowing streams. It enjoys all grades of climate that prevail from the equator to nearly the arctic circle. It possesses every variety of soil, and is adapted for the growth of all kinds of grain, fruits and flowers; and in it nearly all classes of animated beings can find a congenial home. It holds within its compass the advantages, the productions and the pleasures which Nature has elsewhere dispersed over different territories, or divided among distant regions. In a word, Palestine is *A WORLD in miniature*.

* *U. S. Expedition*, p. 324.

We are now prepared to consider the objections of scepticism adverted to at the beginning of this chapter, and to point out some of the probable *reasons* why God selected this particular country for the home of his chosen people.

A FIRST reason may be noticed in *the ISOLATION of this land*. We are expressly told that the Hebrews were to be "a peculiar people," and to be "separate from the nations." "Lo, the people shall dwell *alone*, and shall not be reckoned among the nations." It was the purpose of God to keep the seed of Abraham, during their minority, or the period of their training and growth into a nation, a community by themselves; they were to "dwell alone," that they might be preserved as far as possible from imbibing the idolatrous notions, or following the corrupt practices of the nations about them. Now, it would be difficult to find a country, good and pleasant, on the face of the earth, more secluded from all others, and therefore more suitable for the Divine purpose, than Canaan. This land was literally shut out on all sides from the rest of the world. To the east lay the vast Assyrian Desert; on the west was the long and almost harborless coast of the Mediterranean; along the whole southern frontier stretched "the great and terrible Wilderness of Paran;" while on the north it was protected by the stupendous ramparts of Lebanon and Hermon, which left but a narrow gateway open, the Valley of Coele-Syria, which lay between them. Thus in this land "the Vine of God's own planting" "was hedged round about," by sea and desert and

mountain, that neither "the boar of the wood," nor "the beast of the field" should harm it.

A SECOND reason for the selection of Canaan may be seen in the fact, that *the physical structure of the country presented a suitable FRAME-WORK or MOULD for enclosing and forming the national character to the will and purposes of God.* The history of the world proves that the position, features, and climate of a country, in no small degree, determine both the pursuits and the character of its inhabitants. Of this the Greeks and the Romans in the past, and the Britons and New Englanders in the present, are notable examples. "The physical characters of a region," says Dr. McCosh, "the nature of its surface, whether flat or hilly, its soil and minerals, the size and flow of its rivers, the mountain chains which cross it, and the bays of the sea which indent it, the clearness or cloudiness of its atmosphere—all these have moulded to some extent the physical peculiarities of man, and determined his tastes, his pursuits and his destiny."* Hence when the Lord chose this peculiar territory for the inheritance of his people, He had an eye to something more and something higher than mere means of subsistence; He saw in it conditions that would quicken to industry, surroundings that would stimulate to obedience, and scenes calculated to inspire devotion, and altogether, such as would help to mould the character and shape the history of his people after his own will. The fertile plains, the airy hills, the deep and heated

* *Typical Forms*, p. 385.

valley, the wide and blue sea, the towering mountains, the mysterious lake and the dreary desert—were all to be means of inspiring, soothing, awing, interesting, or elevating their hearts and minds. The varied vegetation of the land—the cedar, the palm, the vine, the olive, the fig-tree, the rose and the lily, by the gracefulness of their forms, by the beauty of their tints, by the richness of their fruits or the luxuriance of their foliage, were likewise to contribute their pure and refining influence for the same end. It was with reference, not so much to their bodily wants as to the development of their mental faculties and the elevation of their moral and religious character, that this unique and secluded country was assigned to them for their home—a country in which the distant view of “the wilderness of their wanderings” would ever keep in memory their great deliverance—a country in which from every hill-top the sight of surrounding desert barrenness would serve to inspire them with gratitude for their happy lot—a country of which the blessings would be so evidently the gift of Heaven as to raise their thoughts perpetually to the Great Giver of all, and to bind them in grateful, holy allegiance to Himself through all generations.

A THIRD reason for the choice of Canaan was *its pre-eminent fitness to be the Birth-Land of the Bible—the unequalled variety of its scenery, climate and productions render it a most suitable place for the penning of the Holy Scriptures in a style of expression, figures and illustrations fitted to interest and instruct the human race generally.* It is true—most true, indeed—that those Scriptures were

given by inspiration of God, yet as the truths they embodied were conveyed through human mediums and were addressed to human beings, they had of necessity to be clothed in terms they understood, and illustrated by figures and comparisons with which they were familiar. And no spot on the earth's surface could have been selected which could better have supplied the writers of a Book intended to instruct men of every latitude and climate, with images and illustrations familiar, one or other of them, to the dwellers in every region of the globe. If the Sacred Volume had been written in Borneo or in Greenland, on the banks of the Ganges or of the Amazon, in the heart of Arabia or the heart of Africa, how widely separated it had been from the ideas, sympathies and interests of the great majority of the earth's inhabitants; how limited a measure of their feelings or imaginations had been represented by it. The truths, indeed—the abstract truths—would have been the same; but the forms in which they had been clothed would have been widely different, and the power they possessed to affect us would have been greatly weakened.

But the Bible having been written *where* and *as* it has, we have in it scenes and similitudes, transactions and narratives, with which our own experience and observation have so much in common, that they come directly home to every man's bosom, and to every man's business in life. We have the history of a pastoral people, of an agricultural people, of a trafficking and military people, in the several tribes at their various occupations as shepherds, husbandmen, traders or warriors, according as

they occupy the hill-country or the plain, the shore of the sea or the margin of the desert. We have scenes of land and ocean, the climate of the tropics and of the snow-clad mountains, the productions of India and of Europe. Hence the Holy Book, its parables and predictions, its psalms and spiritual songs, designed to enlighten the minds, to comfort the hearts, and to animate the souls of men in all regions of the world, embrace within their range the natural features and vicissitudes of almost every country.

The devotion of the *mariner* and of *maritime countries* finds natural expression in the numerous allusions to the waves and roar and perils of the sea—"The great and wide sea, wherein are things creeping innumerable, both small and great beasts"—"He commandeth and raiseth the stormy wind, which lifteth up the waves thereof"—"Deep calleth unto deep; all thy waves and thy billows are gone over me"—"He maketh the storm a calm, so that the waves thereof are still"—"He bringeth them unto their desired haven"—etc.

The peaceful *keepers of flocks and herds* among the far inland glens and mountains also find the gratitude and joy that glow within their hearts expressed in hallowed songs abounding in references to the very objects that through life interest their minds, and to scenes that daily delight their hearts—"We are the people of his pasture, and the sheep of his hand"—"All we like sheep have gone astray"—"The Lord is my shepherd, I shall not want: He maketh me to lie down in green pastures; he leadeth me beside the still waters"—"Though the

flock be cut off from the fold, and there be no herd in the stalls, yet I will rejoice in the Lord, I will joy in the God of my salvation"—etc.

The diversified soil and recurring seasons of Canaan presented and suggested imagery to the sacred penmen, that have rendered nearly every operation of the *husbandman* vocal with Divine Truth—with mementos of man's dependence or evidences of God's bounty, with invitations to prayer or calls to duty. "He watereth the earth, and maketh it bring forth and bud, that it may give seed to the sower, and bread to the eater"—"He causeth grass to grow for the cattle and herb for the service of man; and wine that maketh glad the heart of man, and oil to make his face to shine, and bread which strengtheneth man's heart"—"Thou waterest the ridges thereof abundantly; thou settlest the furrows thereof; thou makest it soft with showers; thou blessest the springing thereof: thou crownest the year with thy goodness"—etc.

With these milder scenes and images, the chosen Inheritance offered also those of a more terrible character, and such as at once meet the experience, touch the feelings and rouse the souls of *those inhabiting the torrid regions* of the globe—the earthquake, the volcano, and the hurricane. "He looketh on the earth and it trembleth"—"He toucheth the mountains and they smoke"—"He bowed the heavens and came down, and there was darkness under his feet"—"The Lord thundered out of heaven, and the Highest gave his voice, hailstones and coals of fire"—"The voice of the Lord divideth the

flames of fire"—"The hills melted like wax at the presence of the Lord"—etc.

Nor did this wonderful land fail to supply images and experiences that come home to those whose lot is cast in *the colder and more dreary parts of the earth*. Embodied in the songs of Zion we find the allusions: "Time of snow"—"Snow and vapors"—"Snow like wool"—"Hoar-frost like ashes"—"Ice-like morsels"—"Who can stand before his cold"—"Though your sins be as scarlet, they shall be white as snow"—"Wash me and I shall be whiter than snow"—etc.

These examples are sufficient to show what fitness there was in the Land chosen of God, to be the theatre on which the history should be made, and the country in which the psalms and promises and predictions should be written, that were to be for the edification and comfort of mankind in all ages and countries of the world.

But above and beyond all, in the choice of this particular country regard was had to one greater than patriarchs or prophets, even to the incarnate Son of God: nay, behind, and far behind all indication of *choice*, even in the Divine plan and preparation of this peculiar land, reference was had to His wondrous ministry of wisdom, love, and power among men; such materials were deposited for its formation at the bottom of the sea, and such forces were employed for its upheaval in hills and valleys as would constitute it a suitable field for the proclamation of his message of grace, for the exercise of his miraculous benevolence, and for laying Him down upon the altar of Divine Justice, a sacrifice for the sin

of the world. Had the Son of the Highest appeared among men in any other country, the Gospel History, in the character of the materials which compose it, would have been wholly different from what it is. Many of his most important instructions, as well as most wonderful works, grew out of the local peculiarities or conditions of the country. His miracles were called forth by the diseases of its *climate*, by the storms of its *lake*, by the destitution of its *desert*, and by the dead buried in its *caves*. His teachings were throughout interwoven with the natural features and productions of the land; His inimitable parables were read from its *vineyards*, its sown *fields*, its hid *treasures*, its *tares*, its *fig trees*, its drawn *fish*, its wandering *sheep*. In a word, Palestine, in its features and productions, was as closely connected with the ministry and death and burial of Christ, as are the warp and woof of a piece of tapestry with the varied forms and figures displayed upon it.

A FOURTH reason for making Canaan the home of his chosen people was *its central position in regard to the inhabited parts of the earth*. "I have set Jerusalem in the midst of the nations and countries that are round about her." As it was necessary to place the sun in the centre of the planetary system, that its light and heat might be diffused more readily and equably to all the members of that system—so it was expedient that the Seed of Abraham, the Depositaries of Divine Truth, should be planted, as it were, in the midst of the world, that the light of that truth might be the more readily disseminated among all nations. Looking at the map of

the world, it will be seen that no district or country more central to the three great divisions of the Old World could have been chosen than Canaan. It forms as nearly as possible the point of junction between Asia, Europe, and Africa, into which, in the fulness of time, the light of the Gospel should flow, as the saving health of all nations.

We see, then, that Canaan was assigned to God's chosen people as their home and inheritance for reasons worthy the Divine wisdom, and for ends most gracious toward man. And we learn, hence, too, that God did but give to Abraham a glimpse of his long-formed and far-reaching plans toward our fallen race when He said to him, "Lift up now thine eyes, and look from the place where thou art northward, and southward, and eastward and westward; for all the land which thou seest, to thee will I give it, and to thy seed for ever." Long before the Patriarch had thus looked around him from that eminence, yea, "while as yet the Lord had not made the world, nor the fields, nor the first clod of earth," His holy eye had looked down from the height of his sanctuary, and *prospectively* surveyed and divided the Land among his numerous posterity yet unborn. Already, in his prescient view, that division among the Tribes had been made, that holy Book had been written, that Mount Zion had been crowned with the sacred Temple, that Calvary had sustained the mysterious Cross of his beloved Son, and the tidings of his redeeming love had gone forth from Jerusalem among all nations. "Known unto God are all his works from the beginning."



TOPOGRAPHY

AND

THE GOSPEL HISTORY.

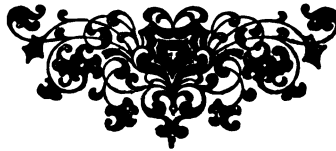
Wherever a story, a character, an event, a book, is involved in the conditions of a spot or scene still in existence, there is an element of fact which no theory or interpretation can dissolve.—STANLEY.

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- I. CONNECTION AND HARMONY OF THE GOSPEL HISTORIES WITH LOCALITIES,
AS FOUND AND SEEN AT THIS DAY.
- II. THE CONNECTION AND CORRESPONDENCE OF THE IMAGERIES OF THE GOS-
PELS, AND THE FEATURES AND PRODUCTIONS OF THE COUNTRY.



TOPOGRAPHY

AND

THE GOSPEL HISTORY.

HE great subject of the Gospel History is Jesus of Nazareth. In this wonderful Person we have a character that stands alone in all history. The life which He led was the most spotless, the morality which He taught was the most pure and elevated, and the death with which He crowned both was the most noble and sublime ever known on the earth. \ By the power of his example, and the purity of his doctrine, and the triumph of his death, He laid the foundation of a kingdom, which all the powers of darkness in earth and hell have not been able to move, and which to-day embraces the strength and commands the homage of the most civilized nations of the globe.

Wonderful, indeed, is the character of Jesus. And hardly less wonderful is the manner in which it is portrayed in the Gospel histories—written after no formal or studied plan, but as it were undesignedly, in brief

and simple narratives of a variety of incidents, strung together with but slight regard even to their right order and connection, and yet yielding a result of unequal moral beauty and power—a portraiture original, consistent, symmetrical, perfect and lovely beyond all that poet or philosopher had ever conceived.

These narratives of the Evangelists, breathing a spirit too unselfish and too pure for a fallen race, while they have compelled admiration in every age and land, have been assailed as no other writings ever have. No other records have passed through such an ordeal of criticism. Nothing that is embraced in them, nothing that is connected with them, has escaped the most searching scrutiny. And no means or method, that can well be conceived, has been left unemployed to oppose their influence, to disprove their claims, and to overthrow their authority. The resources of talent, learning, ingenuity and skill have been well-nigh exhausted in these efforts. The last, and perhaps most subtle and notable attempts of this character have been those of Strauss, in Germany, and Renan, in France. Renan has exercised his ingenuity together with his brilliant and fascinating style to convince his readers that the Gospel History is but a *legend*, a mixture of some facts with a multitude of popular fancies, which, in the lapse of time, won for itself general acceptance as a true record. Strauss employed all the learning at his command to place the Gospel History on a par with heathen myths, which had their birth in the dreams of superstition, or the wild fancies of poets. According to this

mythic theory, "a religious consciousness of a peculiar character appeared in the first century, beginning at Judea; and by the opening of the second century it had reached every province of the Roman World. This gave rise to myths; and these myths committed to writing are the Four Gospels and the Book of Acts, and some say the Epistles of Paul."

Both these theories, the legendary and the mythic, like a hundred others before them, have proved miserable failures. The Gospel History, as is obvious to the most superficial reader, is neither cast in the form, nor dressed in the garb of a myth or legend. The first and the last impression which the perusal of it makes upon every fair-minded reader is that the writers were men of artless simplicity and honesty, relating what they had seen and heard. Their learning, their critical sagacity, or their worldly wisdom, may be questioned or even denied, but it is impossible to deny their good faith; it shines forth from every chapter and every verse; it is even strengthened by their few discrepancies in minor details, while it is sealed by their own life-blood.

Unlike the writers of myths and legends, and wholly unlike all impostors, the Evangelists do not attempt to picture out, or to embellish, or even to impart a shade of imaginative coloring to the scenes and transactions they relate. "They are," as Professor Schaff has justly observed, "the most objective of all historians; they abstain from every intrusion of their own feelings and reflections, even when they record the most exciting

scenes, the bitterest persecution and the deepest sufferings of their Master. Their individuality is lost in the events, which are supposed to speak best for themselves, without note or comment."

Myths, legends, and impostures do not usually fix dates, nor attach themselves to precise localities; they carefully eschew such particulars as dangerous, and prefer unmarked periods and undefined somewheres. But in the New Testament history throughout are found constant allusions to specific times and circumstances, to well-known cities and provinces, to kings and governors, to public officers and private persons, such as are the natural results of an actual and faithful and contemporary history. The deeds and discourses which lie at the foundation of Christianity were not put forth in a cave, or done in a corner, but openly in the sight of friends and foes. The very spirit of the Gospel, *active benevolence*, prompting to journeys by land and to voyages by sea for the good of mankind, has served to connect it by a thousand links with the geography and history of those countries where its labors and sacrifices of love were enacted. In this way the sacred record is laid open to the most searching scrutiny as to its dates and distances and localities. And it is impossible for him who intelligently makes the comparison not to be struck by the constant agreement between the statements of Scripture History and the topography, climate, and productions of those regions as found at this day. And herein we have a class of evidences in confirmation of that history which can neither be gainsaid nor

resisted. "Facts," says Professor Stanley, "are stubborn, and geographical facts happily the most stubborn of all. We cannot wrest them to meet our views; but neither can we refuse the conclusions they force upon us. It is by more than a figure of speech that natural scenes are said to have 'witnessed' the events which occurred in their presence. They are 'witnesses' which remain when the testimony of men and books has perished. They can be cross-examined with the alleged facts and narratives. If they cannot tell the whole truth, at any rate, so far as they have any voice at all, they tell nothing but the truth."

Now it is a fact patent to all who have given attention to the subject, that every successive examination and cross-examination to which the localities of Palestine have thus far been subjected, have served only to prove more and more conclusively, that the writers of the Gospels must have been citizens of that country, and must have been dwellers in it at the time of which they speak. The harmony between the simple statements and incidental allusions in their narratives and the present natural features of the land is striking and complete.

Many of the discourses, parables and miracles related in the Gospels are so involved in the conditions, surroundings, or imagery of the localities where they transpired, and there remain of these enough so unaltered to the present day, that a glance at the real scenes carries conviction to the candid mind, that in those Gospels, he is reading, not myths nor legends, but real

histories, and that he is there following, not a phantom hero, but a real and living man, who trod the ground on which he stands, and looked upon the scene on which his eyes now gaze.

In evidence of the correctness of the foregoing general remarks, we now request the reader's attention to two classes of specific facts.

✓ I. *The close connection and entire harmony of the Gospel History with KNOWN LOCALITIES.* So remarkable is this, that more than one distinguished traveller has pronounced the Bible "the best hand-book or guide to Palestine."

According to the Gospel narrative Jesus was born at BETHLEHEM, a town of the tribe of Judah. This town or village still remains, under the name *Beit-lahm*. It is situated, as of old, some half a dozen miles south of Jerusalem on a narrow hill ridge, with creeping vineyards along its slopes, and corn-fields below, as in the days of Ruth and Boaz, with the well a little distance from the gate as when David longed to quench his thirst therefrom, and the wild hills spreading eastward where the shepherd's flocks "who kept watch by night" may have wandered. The sight and the whole scene of this town are in perfect agreement with all we read of them in the sacred history; there exists no doubt of its identity, nor has there ever been a doubt. Justin Martyr, who wrote within fifty years after the death of the apostle John, mentions that the spot of the Nativity was well known, and pointed out to pious visitors in his day. And 180 years later, in commemoration of the

event, the Emperor Constantine erected his magnificent Basilica, or Church of the Nativity, over what was then believed to be the very place; that church, after passing through many and various vicissitudes, remains there to the present day, and is now the oldest monument of Christian architecture in the world.

The evangelists record of Jesus, that the home where he grew from tender infancy to the ripeness of manhood was at NAZARETH, in Galilee. And this place, like Bethlehem, has preserved his memory through all the centuries, and stands forth among those hills to-day, a visible witness for the reality of his person, and the truth of his history. It is situated among the south ridges of Lebanon, just before they sink down into the Plain of Esdraelon. Here runs, in a waving line, nearly east and west, a valley about a mile long, and, on an average, a quarter of a mile broad, but which at a certain point enlarges itself considerably so as to form a sort of basin. In this basin or enclosure, along the lower edge of the hill-side, lies the quiet, secluded village of Nazareth, in which the Saviour of men spent the greater part of his earthly existence. The surrounding hills vary in height, some of them reach an elevation of some four or five hundred feet. They have rounded tops, are composed of the glittering limestone which is so common in that country, and, though on the whole sterile and unattractive in appearance, present not an unpleasing aspect, diversified as they are with the foliage of fig-trees and wild shrubs, and with the verdure of occasional fields of grain. Our familiar hollyhock is one of the gay

flowers which grow wild there. The enclosed valley is peculiarly rich and well cultivated; it is filled with corn-fields, gardens, hedges of cactus, and clusters of fruit-bearing trees. Being so sheltered by hills, Nazareth enjoys a mild atmosphere and climate. Hence all the fruits of the country—as pomegranates, oranges, figs, olives—ripen early, and attain a rare perfection.

Two localities connected with Nazareth, though not directly related to our subject, yet are of an interest deserving of notice. One of these is “*The Fountain of the Virgin*,” situated at the northeastern extremity of the town, where, according to tradition, the mother of Jesus received the angel’s salutation (Luke i. 28). Though we may attach no importance to this latter belief, we must, on other accounts, regard the spring with feeling akin to that of religious veneration. It derives its name from the fact that Mary, during her life at Nazareth, no doubt accompanied by “the child Jesus,” must have been accustomed to repair to this fountain of water, as is the practice of the women of that village at the present day. Certainly, as Dr. Clarke observes, if there be a spot throughout the Holy Land that was undoubtedly honored by her presence, we may consider this to have been the place; because the situation of a copious spring is not liable to change, and because the custom of repairing thither to draw water has been continued among the female inhabitants of Nazareth from the earliest period of its history. The well-worn path which leads thither from the town has been trodden by the feet of a long, long chain of generations.—The other place is

the summit of the hill that rises immediately back of the town, which commands one of the grandest views in all the Land. In the north are seen the ridges of Lebanon, and, high above all, the white top of Hermon; in the west, Carmel, glimpses of the Mediterranean, the bay and the town of Akka; east and southeast are Gilead, Tabor, and Gilboa; and south, the Plain of Esdraelon and the mountains of Samaria, with villages on every side, among which are Kana, Nein, Endor, and Taanach. It is unquestionably one of the most beautiful and sublime spectacles which the earth has to show. We may well believe that the Saviour, during the days of His seclusion in the adjacent valley, often resorted to this very spot to look abroad upon the glorious works of the Creator, which so lift the soul upward to Himself. One of the grandest views of Hermon is that which must have many a time burst upon Him as He ascended from the valley eastward on His way to Cana and Tiberias.*

In this quiet and secluded village every statement and allusion of the Evangelists finds its clear and full confirmation. Its name, en-Nâzirah, is the same as that given it in Matthew ii. 23. It is built on a hill-side, as described in Luke iv. 29. It is situated within the Province of Galilee, as stated in Mark i. 9. It is near to Cana, as intimated in John ii. 1, 2, 11. Behind and above it is a precipice, steep and forty feet high, corresponding to that described in Luke iv. 29, to which his enraged fellow-townsmen led him, that they might

* For some of the preceding facts and statements the writer is indebted to *Smith's Dictionary of the Bible*.

cast him down headlong to destroy him. Its site stands 1750 feet higher than that of Capernaum by the Sea of Galilee, so that when he visited the latter place, as stated both in Luke iv. 31, and in John iv. 47, he literally "went down" to Capernaum. So correct and definite are the statements of the Gospel History; yet all these topographical facts are mentioned merely incidentally therein; the correspondence, therefore, between the statements and the facts as found now existing, is all the more wonderful and convincing.—Shortly after the close of the third century, Helena, the mother of the emperor Constantine, built a church at Nazareth, and named it the *Church of the Annunciation*. In the time of the Crusaders, it was the Episcopal See of Bethshean. "At present there are there a Franciscan Convent, a Greek church, a Latin church, and a Protestant Missionary chapel."

As Jesus approached the mature age of thirty years, the Gospel narrative states that, preparatory to entering upon his public ministry, he left Galilee and went down the valley of the Jordan, to receive BAPTISM at the hands of John, who was at that time exercising his ministry on the banks of that river. And here again we shall find every statement made or intimation given in perfect accordance with the scene as it exists at this day. It was in "the wilderness," the retired solitude of the deep valley of the river of Palestine. "On the banks of the rushing stream, as related in Matthew iii., the multitudes gathered—the priests and scribes from Jerusalem, down the pass of Adummim; the publicans

from Jericho on the south, and the Lake of Gennesareth on the north; the soldiers on their way from Damascus to Petra, through the Ghor, in the war with the Arab chief Hareth; the peasants from Galilee, with ONE from Nazareth, through the opening of the Plain of Esdraelon. The tall 'reeds,' or canes in the jungle waved, 'shaken by the wind;' the pebbles of the bare clay hills lay around, to which the Baptist pointed as capable of being transformed into 'the children of Abraham;' at their feet rushed the refreshing stream of the never-failing river.* "And they were baptized of him in Jordan, confessing their sins. And Jesus, when He was baptized, went up straightway out of the water: and, lo, the heavens were opened unto Him, and he saw the Spirit of God descending like a dove, and lighting upon Him: and, lo, a voice from heaven, saying, This is my beloved Son, in whom I am well pleased."

"Then was Jesus led up of the Spirit into the wilderness to be TEMPTED of the devil." The wilderness here referred to was doubtless that on the other side of the river, for "John was baptizing beyond Jordan;" besides, He is described as being "led up by the Spirit"—up to the desert hills beyond; and He was there "with the wild beasts," that lurked in their undisturbed caves and thickets. On these elevations the shelving and shattered rocks ever and anon lay exposed—and the tempter, pointing Him to these in his long-continued fast, said, "If thou be the Son of God, command that *these stones*

* Stanley's *Sinai and Palestine*, p. 307

be made bread." And the peculiarity of these lonely heights offered the evil one a ready facility to present his temptation in another form: "and the devil taketh him up into an exceeding high mountain, and showed him all the kingdoms of the world" (*i. e.* of the land). From a high point on this eastern range, a little north of the Jabbok, a most extended prospect of the whole region of Canaan is presented, and which strikingly corresponds with that here indicated. Lebanon, the Sea of Galilee, Esdraelon in its full extent, Carmel, the Mediterranean, and the whole range of Judah and Ephraim are distinctly visible. W. H. Palmer pronounces it the finest view he ever saw in any part of the world.* And Dean Stanley makes the statement, "This view—so multiplied and so beautiful—must have been the very prospect which presented itself to the eyes, first of Abraham and then of Jacob, as they descended from these summits on their way from Mesopotamia; it must have been substantially the same as that which was unfolded before the eyes of Balaam and Moses. And it is in all probability the view which furnished the frame-work of the vision of *all the kingdoms of the world*, which was revealed in a moment of time to HIM who was driven up from the valley below to these mountains at the opening of his public ministry."*

Not many months after his mysterious temptation we find Jesus at SYCHAR, on his way from Judea to Galilee. In this journey, "he must needs go through Samaria.

* *Sinai and Palestine*, p. 315.

Then cometh he to a city of Samaria, which is called Sychar, near to the parcel of ground that Jacob gave to his son Joseph. Now Jacob's well was there. Jesus, therefore, being weary with his journey, sat thus on the well: and it was about the sixth hour. There cometh a woman of Samaria to draw water. Jesus saith unto her, Give me to drink. For his disciples were gone away unto the city to buy meat." This incident, together with the interesting and important discourse, both with the woman and with the disciples, to which it gave rise, is one fraught with confirmations of the Gospel History. The whole of the beautiful and instructive story, as related by John, grew spontaneously out of the situation where the Saviour on his journey found himself at the noon-day hour; and all the roots of the story, instead of springing from some mythic or legendary brain, intertwine among the very peculiarities of the place which still remain for examination and cross-examination, if desired. In passing from Jerusalem to central Galilee, whither Jesus was going, the traveller still "must needs pass through Samaria," and pass, too, "near to Sychar," or where Sychar stood, of which traces are yet discernible. "Jacob's Well" is still there, partly hewn in the rock and partly incased in masonry. That well is still "deep," not less than seventy-five feet, though much rubbish has fallen in and accumulated at the bottom. Fragments, also, of the temple still remain on "this mount" of Gerizim, in which the Samaritans said "men ought to worship." The rich grain "fields," to which the Saviour pointed his disciples, still spread in

prospect from the spot, as when "he sat weary by the well." In a word, all the essential features of the scene, as described by the Evangelist, remain unto this day.

Dean Stanley, who visited this spot in 1853, records his impression of the whole locality in its bearing on the sacred narrative, in the following graphic sentences: "Of all the *special* localities of our Lord's life in Palestine, this is almost the only one absolutely undisputed. By the edge of this well, in the touching language of the ancient hymn, '*Quærens me, sedisti lassus.*' Here on the great road through which 'He must needs go' when 'He left Judea, and departed into Galilee,' He halted, as travellers still halt, in the noon or evening of the spring-day by the side of the well, amongst the relics of a former age. Up that passage through the valley, His disciples 'went away into the city,' which He did not enter. Down the same gorge came the woman to draw water, according to the unchanged custom of the East, which still, in the lively concourse of veiled figures round the way-side wells, reproduces the image of Rebekah, and Rachel, and Zipporah. Above them, as they talk, rose 'this mountain' of Gerizim, crowned by the Temple, of which the vestiges still remain, where the fathers of the Samaritan sect 'said men ought to worship,' and to which still, after so many centuries, their descendants turn as the only sacred spot in the universe. And around them, as He and she thus sate or stood by the well, spread far and wide the noble plain of waving corn. It was winter or early spring—'four months yet to the harvest;' and the bright golden ears

of those fields had not yet 'whitened' their unbroken expanse of verdure. But as He gazed upon them they served to suggest the glorious vision of the distant harvest of the Gentile world, which, with each successive turn of the conversation, unfolded itself more and more distinctly before Him, as he sate (so we gather from the narrative) absorbed in the opening prospect, silent amidst His silent and astonished disciples."*

* H. B. Tristram, who, with his company of scientific explorers, closely examined this locality and its surroundings in 1864, says: "We mounted the edge of the old vault, and read together John iv., the first unfolding of a spiritual religion for the whole world. That chapter read by Jacob's Well brings home the accuracy of the narrator. The very ruins are in keeping with the scene."†

And Dr. J. P. Newman, who was at the place in 1861, writing on the spot, says: "Had St. John written the incidents of the Saviour's journey from Jerusalem to Sychar with a previous knowledge that his narrative would be subjected to a searching criticism by the enemies of Divine truth, he could not have written with greater accuracy. As the facts of topography on which the traveller relies for the credibility of the story are recorded merely as incidents to the story itself, the correspondence between the statement and the fact is the more wonderful and convincing."‡

The principal scene of the Saviour's ministry was the

* *Sinai and Palestine*, pp. 238, 239. † *Land of Israel*, pp. 147, 148.

‡ *Dan to Beersheba*, p. 318.

basin of the SEA OF GALILEE. Having been rejected and persecuted by his own people, we read that, "Leaving Nazareth, he came and dwelt in Capernaum, which is upon the sea-coast, in the borders of Zabulon and Nephthalim." The country bordering on this beautiful lake in his day was widely different in its condition from what it is at present. It was then occupied by a large and busy population. The soil was rich, and well cultivated everywhere. Owing to the great depression of the whole region below the sea level, the climate was warm, and the gardens and vineyards yielded all the delicious fruits of the tropics. Every quarter gave signs of activity and thrift. Two splendid cities, bearing the names of royalty, adorned the shores—Tiberias toward the southern extremity, and Julias at the northern. Besides these were Capernaum, Chorazin, Bethsaida, Magdala, and many other lesser villages; some of these stood out on the clear banks, and some lay half-hid in the foliage of the receding hill-sides. These cities and villages sent forth their fishermen by hundreds over the lake, which, from remotest antiquity, had abounded with fish. Along the water's edge were heard the resounding strokes of the busy ship-builders at every convenient point. The surface of the lake was constantly dotted with the white sails of vessels of traffic and pleasure, sailing with the gentle breeze, or scudding before the mountain gusts; while "the beach sparkled with the houses and palaces, the synagogues and the temples of the Jewish or Roman inhabitants." In a word, the basin of the Sea of Galilee was at that period a focus of life and activity, and was often called the "Garden of Northern Palestine."

This inland sea with its surroundings "was to the Roman Palestine almost what the manufacturing districts are to England. Nowhere, except in the capital itself, could Jesus have found such a sphere for his works and words of mercy; from no other centre could 'His fame' have so gone throughout all Syria; nowhere else could He have so drawn round Him the vast multitudes who hung on His lips 'from Galilee, from Decapolis, from Judea, and from beyond Jordan,' and ran 'through that whole region round about,' 'carrying about in beds' through its narrow but crowded plain 'those that were sick, wherever they heard He was,' and 'whithersoever he entered,' into any of the numerous 'villages or cities,' there 'they laid the sick in the market places,' . . . 'many coming and going, so that He had not time so much as to eat.'

"In that busy stir of life were the natural elements, out of which His future disciples were to be formed. Far removed from the capital, mingled with the Gentile races of Lebanon and Arabia, the dwellers by the Sea of Galilee were free from most of the strong prejudices, which, in the south of Palestine, raised a bar to his reception. 'The people in the land of Zabulun and Nephthalim, by the way of the sea beyond Jordan, Galilee of the Gentiles, had sat in darkness,' but from that very cause they saw more clearly 'the great light,' when it came: 'to them that sat in the region and the shadow of death,' for that very reason 'light sprang up' the more readily. He came to 'preach the Gospel to the poor,' to 'the weary and heavy-laden'—

'to seek and to save that which was lost.' Where could he find work so readily as in the ceaseless toil and turmoil of these teeming villages and busy waters? The heathen or half heathen 'publicans,' or tax-gatherers, were there, sitting by the lake side 'at the receipt of custom.' The 'women who were sinners' were there, either drawn from the neighboring Gentile cities or corrupted by the license of Gentile manners. The Roman soldiers were there, quartered with their slaves, to be near the palaces of the Herodian princes, or to repress the turbulence of the Galilean peasantry. And the hardy boatmen, filled with the faithful and grateful spirit by which that peasantry was always distinguished, were there also, to supply the energy and docility which He needed for his followers."* Such was Christ's chosen field of labor.

Now in reading the history of the gracious ministry of Jesus in this notable field, our feeling, our abiding impression is, not that we are pursuing a phantom or mythic character, but that we are tracing the steps of a living man in active contact with living men, and in visible connection with the unchanging features of physical nature—of mountain, plain, river, lake and desert. All the steps and doings of Jesus in this peculiar region, as related by the Evangelists, are found to be in perfect harmony with the conditions and characteristics of the locality. Wherever the Gospel history places Him, on the water or on the land, in the city or

* *Sinai and Palestine*, p. 368.

in the desert place, the representations to their minutest details are always in entire accordance with what is known to have been the natural state of things there. And not only that, but many of the deeds performed and many of the discourses uttered here could not have been performed or uttered in any other place in the land, as they had their birth in, or were called forth by, what was peculiar to this spot. Of all this the following will serve as convincing examples: Jesus from on board the ship teaching the multitude assembled on the shore—The disciples at the Master's word letting down their net and enclosing a multitude of fishes—Jesus, seeing Peter and Andrew casting their net into the sea, calling them to follow Him and become fishers of men—James and John bidden to leave their father and their nets and do the same—The stilling of the great tempest in the sea—Jesus requesting the disciples to provide a small ship lest the gathering people should throng Him—The rushing of the maddened swine down a steep place to be drowned in the sea—The parable of the mixed fishes drawn to land—Jesus departing by ship to a desert place, and the people following on foot—Jesus walking on the sea, and Peter's attempt to do the same—Jesus standing on the shore in the gray of morning and calling to the disciples yet out upon the waters, "Children, have ye any meat?" Now it is obvious that these are incidents in the life of Jesus that could have occurred nowhere else in all Palestine, save where the Gospel History places Him, namely, by the Sea of Galilee; and it is equally obvious that the diversified and important instructions delivered in con-

nection with them could not have been imparted in connection with the natural conditions or imagery of any other locality, as those instructions owe their significance and appropriateness to the peculiarities of this Lake and its surroundings. *Here* the events and their lessons are in perfect harmony with the natural scene, *elsewhere* this they could not have been.

Frequent mention is made in the Gospels of the city of *Capernaum*: two miles west of the point where the Jordan enters the Sea of Galilee is a place now named *Tel Hum*; here are extensive ruins, which have long been suspected to be those of *Capernaum*. Captain Wilson, Royal Engineers, in his recent survey of this region made in 1865, after a careful examination of these ancient remains, was led to the belief (and Dean Stanley pronounces his evidence to be of the highest rank), that here indeed is the very site of that city wherein dwelt the Redeemer of men. What chiefly enlisted the interest of Captain Wilson was the ruin of the "White Synagogue," of which he gives the following account: "The Synagogue, built entirely of white limestone, must once have been a conspicuous object, standing out from the dark basaltic back-ground; it is now nearly level with the surface, and its capitals and columns have been for the most part carried away or turned into lime. The original building is seventy-four feet nine inches long, by fifty-six feet nine inches wide; it is built north and south, and at the southern end has three entrances. In the interior we found many of the pedestals of the columns in their original positions, and several capitals of the Corinthian

order buried in the rubbish; there were also blocks of stone which had evidently rested on the columns and supported wooden rafters. If Tel Hum be Capernaum, which we believe it to be, this is without a doubt the Synagogue built by the Roman centurion (Luke vii. 4, 5), and one of the most sacred places on earth. It was in this building that our Lord gave the well-known discourse in John vi., and it was not without a certain strange feeling that on turning over a large block we found the pot of manna engraved on its face, and remembered the words, *"I am that bread of life. Your fathers did eat manna in the wilderness, and are dead."**

Another city in which the Saviour preached the Gospel and wrought many of his mighty works was *Chorazin*. "An hour's journey," says the authority last quoted, "north of Tel Hum, and on the left bank of the valley which falls into the Lake near it, are the ruins of Keazeh, a name strikingly similar to Chorazin, and which Pococke identified with that place. Among these ruins are those of a Jewish Synagogue."†

Both Matthew and Mark make mention of Jesus arriving in the *Land of Gennesaret*. This lay on the west side of the Lake, and which Josephus describes as being thirty furlongs in length, and twenty in breadth, and so fruitful that all sorts of trees grew upon it, enjoying perpetual spring. Such a plain precisely in dimensions and soil and climate is the Ghuweir. Of this H. B.

* *Recovery of Jerusalem*, pp. 267-269.

† *Ib.*, pp. 270, 300.

Tristram says, "Not the slightest question can arise as to the identification of Gennesaret with the modern El Ghuweir." *

"At the southern extremity of the plain of Gennesaret is a heap of ruins, now called Mejdal, the site of *Magdala*, once the home of that Mary whose history is so touchingly recorded in the New Testament." †

Twice the name of *Tiberias* is mentioned in connection with our Lord's voyages over the Sea of Galilee. The site of this once magnificent city is marked by the modern town of Tabariyeh. The ruins are extensive, "and lying about may still be seen some traces of the grandeur of the ancient city—here a magnificent block of polished granite from upper Egypt cut into a basin six feet four inches in diameter; there a hunting-scene carved on the surface of a hard black lintel of basalt. To the south the ruins cover some extent of ground; there are the remains of a sea-wall, and some portions of a city wall twelve feet thick; many traces of old buildings, broken shafts and columns, half-buried in rubbish." ‡

The eventful voyage marked by the "great tempest in the sea" landed the Saviour on its east side, in the country of the *Gergesenes*, where a demoniac, rushing from the tombs behind, met Him ere he had scarce advanced from the shore, whose deliverance led to the destruction of the *herd of swine*. The site of their city, Gergesa, Dr. Tristram identifies with the ruins of Khersa,

* *Land of Israel*, p. 444. † *Recovery of Jerusalem*, p. 275. ‡ *Ib.*, p. 281.

on the left bank of Wady Semakh, at the point where the hills end and the plain stretches out toward the lake. "About a mile south of this, the hills, which everywhere else on the eastern side are recessed from a half to three-quarters of a mile from the water's edge, approach within forty feet of it; they do not terminate abruptly, but there is a steep even slope, which we would identify with the 'steep place' down which the herd of swine ran violently into the sea, and so were choked." * Such is the account given of this long disputed point in Captain Wilson's Survey; and the adventurous McGregor, who has since sailed down this side of the Lake in his open canoe, arrived at the same conclusion.

In the course of the Saviour's ministry by the Sea of Galilee, we read once and again of his retiring to a *desert place*. Though the basin of the Lake, as has been stated, was everywhere a scene of life and activity, yet from almost any point along the shore He would not have had to travel far to find such a place. On ascending the hills or higher ground, everything rapidly changed, and He would soon come to a cool, barren, and thinly-tenanted region. A short walk would carry Him from the throng and din of population to the silence and solitude of the desert. It was these "desert places," thus close at hand, on the table-lands, or in the ravines of the eastern and western ranges, which seem to be classed under the common name of "the mountain,"

* *Recovery of Jerusalem*, p. 286.

that gave the opportunities of retirement for rest or prayer. He sought these solitudes, sometimes alone, sometimes with his disciples. "Come ye yourselves apart into a desert place, and rest a while; for there were many coming and going, and they had no leisure so much as to eat." "And when He had sent the multitudes away, He went up into a mountain apart to pray; and when the evening was come, He was there alone."

Thus the ministry of Christ in the basin of the Sea of Galilee—his teaching on the shores and in the synagogues; his intercourse with fishermen, taxgatherers and centurions; the multitude that thronged Him in the streets, and the storm that overtook Him upon the waters; his journeys, his voyages and his retirements—as related to us in the Gospel History, are not only in entire harmony with every physical condition and feature of this region, but receive, as far as that is now possible, the most satisfactory confirmation from sea and land, plain and mountain, ruined cities and desert places, as these are found and seen at this day.

Our Lord, having at length finished his labors of love among the people of Galilee, took his final leave of those parts, and directed his steps toward Judea, where He was soon to be offered up. The course which He took was the circuitous one of the Jordan Valley. Having crossed the river, He passed down on the east side, teaching the people and healing their diseases, till He arrived at the common fording-place, where He recrossed the stream, and following the road over the plain came to JERICHO. This city was situated some seven miles

west of the Jordan, a mile and a half south of Elisha's Fountain, and near the opening of the lateral valley of the ancient brook Cherith, now the *Kelt*. Jericho was then a place of note, wealth, and grandeur. Herod the Great, more than thirty years before, having made it one of his princely residences, had not only erected several magnificent buildings there, but also constructed vast aqueducts, and established a hippodrome and amphitheatre in its vicinity, and planted in and around it extensive palm-groves, balsam-gardens, and vineyards. Such was Jericho when Jesus arrived there on this memorable journey. And here it was that He gave sight to the blind beggar, sitting by the way-side and crying, "Jesus thou Son of David have mercy on me." Here it was that Zacchæus, the rich publican, ran before and climbed into a sycamore-tree that he might catch a sight of Him as He advanced in the midst of the moving throng. And here, too, He delivered the parable of the *Ten Pounds*, the which when He had spoken, "He went before, ascending up to Jerusalem."—In all this, we again find the Gospel narrative fully sustained; all that is said or implied therein is found in perfect harmony with what remains to be seen at this day, both of the site and surroundings of this ancient city. Little or nothing of the city itself remains, it is true; but it has been ascertained that it lay in the Saviour's direct and only route from the Ford of Jordan to Jerusalem, so that "He must needs pass through it," just as related. It has been found that its site was not less than 3400 feet below that of Jerusalem, so that the evangelist is strictly

correct in saying that "He went before, ascending up to Jerusalem." It is moreover well known that its locality was for many ages marked by palms and balsams and sycamores, the descendants of those planted by Herod and Archelaus. The balsam has utterly perished from the plain; and the last seen of the palm was in 1838; but of the sycamore a remnant still survives—"We were gratified," says Tristram, who was there in 1864, "by the discovery that, though scarce, it is not yet quite extinct in the Plain of Jericho, as we found two aged trees in the little ravine just to the south of these ruins, in illustration of the Gospel narrative." And the prophet's fountain, too, still continues to send forth its cool and sweet and abundant flow, trickling its way in several rills through the glades of tangled shrubs and grass to reach the Jordan river.

Leaving Jericho, our Lord's way led Him through the wild and dangerous gorge of the Kelt—the scene of his own parable of the Good Samaritan—and after advancing through a long ascent of more than a dozen miles, He reached the quiet village of BETHANY, nestled among vines and fig trees in a sunny and secluded hollow close by the very summit of the Mount of Olives. Of the site of this place there does not appear to have ever been a doubt entertained. A village of some 100 inhabitants is still found on the spot; the name, however, has been changed into El Lazariyeh, in commemoration of Lazarus whom the Lord raised here to life after having been laid in his grave. The few particulars given in the Gospel respecting this place, its position on the

Mount and its distance from Jerusalem, have of late been verified by scores of travellers both from Europe and America. In the village are shown the traditional sites of the house of Simon the leper, and of the house and tomb of Lazarus. Whatever may be thought of the correctness of these traditions, certain it is that they have been handed down without a break from a period as early as the fourth century. Of the place pointed out as the grave of Lazarus, which is an excavation in the rock, Dr. Newman says, "Bearing the marks of great antiquity, there is no reason to doubt the identity of this tomb. And now, after the lapse of so many centuries, the inspired story of his resurrection, read upon the spot, has all the freshness of reality."*

Having rested for the night at Bethany, in the morning our Lord set out for Jerusalem. His way lay over the MOUNT OF OLIVES. The distance was but two short miles; He saw fit, however, on this occasion to press into his service the colt of a friendly disciple, and rode the greater part of the way. He was now attended by great numbers of people gathered from all parts of the land to attend the approaching Feast. This was to prove the hour of his highest earthly popularity, yet the hour of his deepest sorrow thus far in the world. While the multitude led him along in triumph, carpeting the road with foliage and with their garments, and shouting, "Hosanna to the Son of David: Blessed is He that cometh in the name of the Lord: Hosanna in the high-

* *From Dan to Beersheba*, pp. 115, 116.

est"—suddenly and to their astonishment, as he came to the brow of the Mount, and beheld the city, "He wept over it, saying, If thou hadst known, even thou, at least in this thy day, the things which belong to thy peace! but now they are hid from thine eyes." This was one of the most remarkable and affecting events in all the Saviour's life on earth; and nowhere does the Gospel narrative appear in more striking accord with local features than it does here. The complete coincidence of the History with the direction and turns and prospects of the road travelled is thus graphically set forth by one who thoroughly studied both on the spot:

"One night He halted in the village, as of old; the village and the desert were then all alive with the crowd of Paschal pilgrims moving to and fro between Bethany and Jerusalem. In the morning He set forth on His journey. Three pathways lead from Bethany to Jerusalem; one a steep footpath over the summit of Mount Olivet; another by a long circuit over its northern shoulder; the third, the natural continuation of the road from Jericho, over the southern shoulder. There can be no doubt that this last is the road of the Entry of Christ, not only because it was always the usual approach to the city for horsemen and for large caravans, such as were now advancing together, but also because this fully meets the requirements of the narrative.

"Two vast streams of people met on that day. The one poured out from the city, and as they came through the gardens whose clusters of palm rose on the south-

eastern corner of Olivet, they cut down the long branches, as was their wont at the Feast of Tabernacles, and moved upwards towards Bethany, with loud shouts of welcome. From Bethany streamed forth the crowds who had assembled there on the previous night, and who came testifying to the great event at the sepulchre of Lazarus. The road soon loses sight of Bethany. It is now a rough, but still broad and well-defined mountain track, winding over rock and loose stones; a steep declivity below on the left; the sloping shoulder of Olivet above it on the right; fig-trees below and above, here and there growing out of the rocky soil. Along the road the multitudes threw down the branches which they cut as they went along, or spread out a rude matting formed of the palm branches they had already cut as they came out. The larger portion—those, perhaps, who escorted him from Bethany—unwrapped their loose cloaks from their shoulders, and stretched them along the rough path, to form a momentary carpet as He approached. The two streams met midway. Half of the vast mass, turning round, preceded; the other half followed. Gradually the long procession swept up and over the ridge, where first begins ‘the descent of the Mount of Olives’ towards Jerusalem. At this point the first view is caught of the southeastern corner of the city. The Temple and the more northern portions are hid by the slope of Olivet on the right; what is seen is only Mount Zion, covered with houses to its base, and surmounted by the Castle of Herod. It was at this precise point, ‘as he drew near, at the descent of the Mount of

Olives'—(may it not have been from the sight thus opening upon them?)—that the shout of triumph burst forth from the multitude, 'Hosannah to the Son of David! Blessed is He that cometh in the name of the Lord.' There was a pause as the shout rang through the long defile; and as the Pharisees who stood by in the crowd complained, He pointed to the stones which, strewn beneath their feet, would immediately 'cry out' if 'these were to hold their peace.'

"Again the procession advanced. The road descends a slight declivity, and the glimpse of the city is again withdrawn behind the intervening ridge of Olivet. A few moments, and the path mounts; again it climbs a rugged ascent, it reaches a ledge of smooth rock, and in an instant the whole city bursts into view. The Temple Tower rises as from the earth, the Temple courts spread out, and the whole magnificent city, with its background of gardens and suburbs on the western plateau behind, lies before the view. Immediately below was the valley of the Kidron, here seen in its greatest depth as it joins the Valley of Hinnom, giving Jerusalem the appearance of a city rising out of a deep abyss. It is hardly possible to doubt that this rise and turn of the road—this rocky ledge—was the exact point where the multitude paused again, and 'He, when he beheld the city, wept over it.' Nowhere else on the Mount of Olives is there a view like this. And this is almost the only unmarked spot—undefiled or unhallowed by mosque or church, chapel or tower—left to speak for itself, that here the Lord's feet stood, and here His eyes beheld what is still the

most impressive view which the neighborhood of Jerusalem furnishes—and the tears rushed forth at the sight.—This scene, with the one exception of the conversation at the Well of Jacob, stands alone in the Gospel history for the vividness and precision of its localization.”*

Descending the shelving road from the brow of Olivet, Christ, with the multitude around Him, in a few minutes reached the Brook Kidron, crossed it, and then passed up into JERUSALEM through one of its Eastern gates. The whole city was moved in view of the unexpected and exultant procession, and on every side was heard the inquiry, Who is this? But onward like a living flood it advanced, and soon, as a Son his Father's house, He entered the Temple amid the acclamations of his friends and the angry murmurs of his enemies.

When at Jerusalem the Saviour, we read, often left the noise and turmoil of the city, and sought rest and retirement in the GARDEN OF GETHSEMANE. He did so on the very last evening of his life. “When Jesus had spoken these words, He went forth over the Brook Kidron, where was a garden, into the which He entered, and His disciples.” There in the midnight watch, He offered prayer “with strong cryings and tears.” There “He sweat as it were great drops of blood falling down to the ground.” There “an angel descended to strengthen Him” in his mortal agony. And there, too, it was, that the perfidious disciple betrayed Him into the hands of His enemies, “for Judas knew the place, as Jesus oft-

* Stanley's *Sinai and Palestine*, pp. 189, 190.

times resorted thither with His disciples"—According to Josephus, the suburbs of Jerusalem, in those days, abounded with orchards, vineyards, fig-enclosures, and gardens, which the people were in the habit of frequenting for quiet or rest or pleasure. Now all the statements of the Gospel point to the Garden of Gethsemane as lying east of Jerusalem, a short distance from the city wall, on the other side of Kidron, and at the foot of the Mount of Olives. And just here we find a spot, now marked by eight aged olive trees, the most aged, probably, on the face of the earth, which from the middle of the fourth century at least has been uniformly pointed out and looked upon as the very site of "the garden" in which the Saviour of the world endured his mortal agony. And after the most careful study of the Word, and examination of the place, this spot is found to fulfil all the conditions of the Gospel history. Tischendorf, the distinguished Biblical scholar of Germany, tells us that he finds the traditional locality "in perfect harmony with all that we learn from the evangelists."* The original garden may have enclosed an area less or greater than that now enclosed—it may have lain, or may have extended a few rods farther north or a few rods farther south than the present limits—and it may be impossible at this day to indicate (as Franciscan monks undertake to do) the three precise spots where the Saviour fell upon his face, or that whereon Judas stood when he gave the treacherous kiss—yet we may sit among these

* *Reise in den Orient*, I. 312.

"venerable olive trees," and read the narrative of what the Saviour endured for our redemption, and feel assured that we are near the place where he prayed, "Saying, Father, not my will, but thine be done;" and where "being in an agony, He sweat as it were great drops of blood falling down to the ground." "Kneeling beneath an aged olive," says Dr. Newman, "I gave myself up to the undisturbed reflections and hallowed memories of the place. The story of our Lord's agony had a reality I had never before experienced."*

We have now contemplated the principal scenes in the Saviour's life—we have been to Bethlehem Judah, the place of his nativity—we have visited Nazareth, the home of His childhood and youth, been to the fountain whence He drank, and to the brow of the hill from which He escaped destruction—we have stood on the bank of the Jordan with the multitude that had come out from every part, and witnessed His baptism and His coming up out of the water—we have ascended the "exceeding high mountain," from whence the tempter showed Him all the kingdoms of the world—we have journeyed to Sychar, looked down into Jacob's Well, and up to the ruins of the Samaritan's Temple—we have surveyed the coasts of the Sea of Galilee, with the ruins of Capernaum, Chorazin, Magdala, and Tiberias; its Plain of Gennesaret, its "steep place" of Gergesa, its mountains and "desert places"—we have followed Him down the other side of Jordan, seen Him ford the stream,

* *Dan to Beersheba*, p. 121.

and crossing the plain, and coming over to Jericho, bosomed in palms and sycamores and balsams—we have traced His steps along the Brook Cherith, and up long ascent to Bethany, where still remain the memory of the name, and the tomb of Lazarus—we have joined the triumphal procession in its march over the crown of Olivet—we have looked down upon Jerusalem from the spot on which the Son of God stood in tears over it—we have gone with him into the Temple, and with Him passed out of the city again and over the Brook Kidron and with Him entered the deep dark retirement of Gethsemane; and in all these widely different and widely separated localities, we have witnessed the most perfect harmony with the statements and allusions of the Gospel History; not a hill lifts its head, not a ruin thrusts up its fragment, not a stream ripples in its channel, at the faintest variance with the Sacred Narrative. And more than all this, we have seen that there exist a close relation and complete accord between the deeds, courses, journeys and voyages ascribed to the Saviour and the places where they are said to have taken place—nowhere in His history do we meet with anything incongruity, anything like “a piece of new cloth on an old garment.” In short, we have in the topography of Palestine as full and as satisfactory evidence that the Gospel is a true History of a true and living Man, as the nature of the case can admit.

II. We have similar but still more striking confirmations of the Sacred Narrative in *The intimate connection and complete correspondence of the IMAGERY of the Gospel*

History with the natural features productions and usages of the country.

The comparisons, figures and similes employed by the Great Teacher are as indigenous to Palestine as are its vines, lilies and fig trees. To be convinced of this we need but glance at a few examples; and we notice, first, the references made to the features of the surrounding region in the *Sermon on the Mount*.

The Mount on which this sermon (Matthew v., vi. and vii.) was delivered, according to *tradition*, lay a little west of the Sea of Galilee, and not far from the city of Tiberias. It is a square-shaped hill, about sixty feet in height, with two tops, now called the "Horns of Hattin," from the village of Hattin at its base. The platform at the top is evidently suitable for the collection of a multitude, and corresponds precisely to the level place (Luke vi. 17) to which Jesus would "come down," as from one of its higher horns, to address the people. The situation, says Dean Stanley, so strikingly coincides with the intimations of the Gospel narrative as almost to force upon us the conviction that this was the spot. Its retired and quiet surroundings rendered it a most suitable place for the occasion, and no other mountain in the neighborhood answers so well the description given.

One of the most striking objects from this Mount, on which the Saviour was sat to teach the assembled multitude, was the ancient city which occupied the crown of the high hill to the north, on which Safed now stands. Its elevated position rendered it too conspicuous to be hidden from the eyes of any, and thus naturally sug-

gested the illustration—*A city that is set on a hill cannot be hid.*

The neighborhood of the Sea of Galilee was enlivened nearly the year round (as it still is) by flocks of birds of various kinds. These, wheeling over the heads of the listening multitude, in their graceful and sportive and happy flights, would present a striking contrast with the toiling and care-worn dwellers of the plain below—sowing, reaping, and stowing away. Such a sight, we may well suppose, it was that led to the touching appeal, *Behold the fowls of the air: they sow not, neither do they reap, nor gather into barns; yet your heavenly Father feedeth them. Are ye not much better than they?*

Summer now coming on, the brilliantly-colored flowers of Palestine were everywhere putting forth their beauties. Variegated tulips, purple and red gladioli, and scarlet anemones (to which the common name *shûsan*, “lilies,” was applied)* abounded on the Plain of Genesareth, and covered the hill-sides around the Master and the listening throng; and to deepen the impression made by the appeal to the fowls of the air, they are bidden again to fix their eyes and their attention on these—*Consider the lilies of the field, how they grow; they toil not, neither do they spin: and yet I say unto you, that even Solomon in all his glory was not arrayed like one of these. Wherefore, if God so clothe the grass of the field, which to-day is, and to-morrow is cast into the oven, shall He not much more clothe you, O ye of little faith?*

* See Tristram's *Natural History of the Bible*, pp. 462-465.

In Palestine, especially in Galilee, heavy rains rapidly flowing together among the hills often form torrents that rush down unexpectedly with a violence that tears up the soil and sweeps away whatever may lie in their course. This was what the Saviour doubtless had many times witnessed in the parts of Nazareth, as it is still what often occurs there, and His eye while on the Mount might have fallen upon the jagged traces, which some such a torrent had recently ploughed down the side of a neighboring hill, which His discerning mind seized and converted into a most appropriate close to his wonderful discourse—*Whosoever heareth these sayings of mine and doeth them, I will liken him unto a wise man, which built his house upon a rock: and the rains descended, and the floods came, and the winds blew, and beat upon that house; and it fell not; for it was founded upon a rock.*

Every observant traveller through Palestine has been struck with the thought, that the imagery of the Saviour's *Parables*, like the above illustrations, must have been derived from the peculiar, yet to the inhabitants familiar scenes and operations of that country. And this no doubt is true. The Lord read His parables to the people from what almost daily fell under their own observation. They are truths which his discerning eye saw inscribed on their fields, their flocks, their vines and fig trees. He did not put the lessons into these objects; they were there before. He simply gave voice to the inarticulate symbols which they by nature bore; and thus His parables are, in an important sense, the natural productions of the land wherein He dwelt and taught.

The first recorded parable of our Lord is that of the "Sower." This was delivered from a boat, to a multitude of people, assembled on the shore, near Capernaum. And now the natural inquiry is, was there anything near or in sight of that spot to suggest the imagery of this instructive parable? This was the question which Dean Stanley pondered, he tells us, as he rode along the track by which the Plain of Gennesareth is approached, where nothing could be seen but the steep sides of the hill alternately of rock and grass. "When I thought," he says, "of the parable of the Sower, I answered, that here at least was nothing on which the Divine Teacher could fasten. It must have been the distant corn-fields of Samaria or Esdraelon on which His mind was dwelling. The thought had hardly occurred to me, when a slight recess in the hill-side, close upon the plain, disclosed at once, in detail, and with a conjunction which I remember nowhere else in Palestine, every feature of the great parable. There was the undulating corn-field descending to the water's edge. There was the trodden pathway running through the midst of it, with no fence or hedge to prevent the seed from falling here and there on either side of it, or upon it; itself hard with the constant tramp of horse and mule, and human feet. There was the good rich soil, which distinguishes the whole of that plain and its neighborhood from the bare hills elsewhere descending into the lake, and which, where there is no interruption, produces one vast mass of corn. There was the rocky ground of the hill-side protruding here and there through the corn-fields, as elsewhere

through the grassy slopes. There were the large bushes of thorn—the ‘Nabk,’ that kind of which tradition says that the Crown of Thorns was woven—springing up, like the fruit trees of the more inland parts, in the very midst of the waving wheat.”* As the Lord stood on the boat, and lifted up his eyes, He might have seen on the rising slopes before Him just such a field, and even a husbandman in the very act of scattering his seed over it; and the lesson which He clearly beheld in the interesting scene He at once interpreted to His attentive audience, saying—*Behold a sower went forth to sow; and when he sowed some seeds fell by the wayside—some upon stony places—some among thorns—and other on good ground.*

Another parable that He put forth was that of the “Tares among the wheat.” This is based on a species of malice well known and often practised in Palestine, and which is familiar enough to this day in some oriental countries. A modern writer, speaking of India, says, “See that lurking villain watching for the time when his neighbor shall plough his field: he carefully marks the period when the work has been finished, and goes in the night following, and casts in what the natives call *pandinellu*, i. e., pig-paddy: this being of rapid growth, springs up before the good seed, and scatters itself before the other can be reaped, so that the poor owner of the field will be for years before he can get rid of the troublesome weed.”† Hence the statement in the parable, *While men*

* *Sinai and Palestine*, p. 418. † *Roberts' Oriental Illustrations*, p. 530.

slept, his enemy came and sowed tares among the wheat, and went his way.—The weeds here called “tares” often spring up spontaneously to a very detrimental degree, in many parts of Palestine; “around Lake Merom, and in the great grain-fields of Samaria, may frequently be seen women and children employed in picking out from the wheat their tall green stalks, which at first sight are hardly distinguishable from the wheat.”* Accordingly, from their familiarity with this practice, the servants in the parable come to the householder, and ask him, *Wilt thou then that we go and gather them up?* The evil seed having been sowed broad-cast, that was a hopeless task, and the answer was, *Nay; lest while ye gather up the tares, ye root up also the wheat with them.* So true both to nature and to life is this remarkable parable.

Under the genial climate of Palestine, and in localities of favorable soil, many vegetable productions attain to a growth that is quite surprising. This is true of the vine in the vale of Eshcol, and it is notably true of the “mustard plant” (*Sinapis nigra*) in various parts of the country. There, this species of mustard often reaches a form and size which the Saviour denominates a “tree,” which has appeared sometimes incredible to the people of the Western World, where it never amounts to anything more than a lowly bush. But our Lord’s representation in this, as in all else, on investigation, has been found strictly correct and natural. Irby and Mangles found it between Bysan and Adjeloun as high

* *Sinai and Palestine*, p. 419.

as their horse's head.* Professor H. B. Hackett came across a little forest of it, in the neighborhood of Mount Carmel, where it measured six, seven, and nine feet in height.† Dr. Thomson says that he has seen the Wild Mustard, on the rich plain of Akkar, as tall as the horse and the rider.‡ And if it attained such a size, growing wild, we may naturally suppose that it grew larger still under cultivation in "a field," or "a garden," as supposed in our Lord's reference. Moreover, Maldonatus and Hiller inform us that birds, being particularly fond of the seed, often settle upon it in great numbers. We see, then, how aptly, and how forcibly, too, the marvellous growth of the Christian Religion, from its small beginning, is set forth in this parable:—*The kingdom of heaven is like to a grain of mustard seed, which a man took, and sowed in his field; which indeed is the least of all seeds; but when it is grown, it is the greatest among herbs, and becometh a tree, so that the birds of the air come and lodge in the branches thereof.* With the growth of the mustard seed into a tree and the fondness of birds for its seed, our Lord's hearers doubtless were familiar; they had often seen these little tenants of the air in their fields and gardens gathering and lodging in the branches; so that there must have been a singular liveliness in the picture which the parable presented to their minds of the gathering of coming multitudes to his church for support, for comfort, and for safety.

In one of the parables delivered by our Lord on the

* *Travels*, Mar. 12. † *Smith's Dict. of Bible*. ‡ *Land and Book*, p. 414.

shore of the Sea of Galilee, He compares the results of the Gospel Ministry to those of a Net, which often encloses a variety of fishes, some good and some bad, which the fishermen carefully separate. The bad, that is, those pronounced unclean by the Law, as wanting fins and scales, were rejected; whilst the good, or those pronounced clean, were carefully preserved for use. "As illustrating this expression," says Dr. Tristram, "we may observe that the greater number of the species taken on the lake are rejected by the fishermen, and I have sat with them on the gunwale while they *went through their net*, and threw out into the sea those that were too small for the market, or were considered unclean. This custom brings out in great force the full bearing of the parable:"* *The kingdom of heaven is like unto a net, that was cast into the sea, and gathered of every kind, which when it was full, they drew to shore, and sat down, and gathered the good into vessels, but cast the bad away.* No comparison or illustration more familiar or more natural to the dwellers around that Lake could have been employed; and we may add, that this was the only spot of inland Palestine, where this image could have any meaning or appropriateness.

Vineyards, from the earliest periods, were common in Palestine; hence the frequency of the *figure* in the Scriptures of both the Old and the New Testament. The Great Teacher opens his parable of the "wicked husbandmen" in these words:—*There was a certain*

* *Natural History of the Bible*, p. 290.

householder, which planted a vineyard, and hedged it round about, and digged a winepress in it, and built a tower, and let it out to husbandmen, and went into a far country. One of the main characteristics of the scenery of southern Palestine are the vineyard enclosures, surrounded by loose stone walls, with a square gray "Tower" in one corner; these may be seen to-day, as of old, on the slopes of Hebron, and of Bethlehem, and of Olivet. "And thus," says Dean Stanley, "the past history of the nation concurs with our own present experience in pointing to what was one of the most obvious and familiar images of Palestine at the time when the parables of our Saviour were delivered, of which no less than five have relation to vineyards." *

The scene of the parable of the "Good Samaritan" is laid on the road from Jerusalem to Jericho; and for the deed of violence and blood which it describes, no more suitable scene could have been found in all the Land; and the topographical allusions in this beautiful narrative offer clear evidence that its author was familiar with the country and had Himself travelled the road and marked the peculiar features of the scene of which He has given so correct and vivid a picture. The unfortunate traveller, it is said, "went *down*" from Jerusalem to Jericho: the former city stood on the high central ridge of the country, the latter in the deep Jordan valley, more than 3000 feet below; we see hence how strictly accurate the description of the parable is. The road from imme-

* *Sinai and Palestine*, p. 413.

diately beyond Bethany lay through "a wilderness as bare and as solitary as the Desert of Arabia," and for a part of its course through a deep and tremendous gorge, dismal and desolate to the last degree. Buckingham, in his *Travels*, speaking of this portion of the road, says, "The very aspect of the scenery, the bold projecting crags of rocks, the dark shadows in which everything lay buried below, the towering height of the cliffs above, and the forbidding desolation which everywhere reigned around, seem to tempt to robbery and murder, and occasion a dread of it in those who pass that way." And Stanley, describing this locality, says, "The caves in the overhanging mountains, the sharp turns of the road, the projecting spurs of the rocks, everywhere facilitate the attack and escape of the plunderers." Here they seize upon the traveller, and rifle him of everything valuable about him, and then leave him bleeding and naked under the fierce heat reflected from the white glaring mountains, to die, unless perchance a passer-by pity and save him. *A certain man went down from Jerusalem to Jericho, and fell among thieves, which stripped him of his raiment, and wounded him, and departed, leaving him half dead!* This touching description, while thus in perfect keeping with the features of the scene, is also in entire harmony with its whole history. Josephus testifies that not only was Judea at this time overrun with robbers and ruffians, who committed the greatest excesses, but that this road in particular was deplorably harassed by banditti. St. Jerome also mentions that this particular part of the road between Jeru-

salem and Jericho, was called the "Red Way," as much blood had there been shed by robbers; and that in his own time, there was at one point in this wilderness a Fort with a Roman garrison, for the protection of travellers; so that the incident of the poor traveller in the parable falling in that very journey among robbers seems taken from the life. And this dread locality is the resort of robbers to this day, and nowhere in Palestine is a guard more necessary; he who goes down from Jerusalem to Jericho without an escort is as liable now as ever to fall among thieves. The parable, indeed, has been enacted within our own day, not a Jew, but an Englishman, being the victim on this occasion.

In the parable of the "unfruitful fig tree" we meet a feature that to our notions seems peculiar, and therefore, so far, improbable—we refer to a *Fig tree* planted in a *Vineyard*. However at variance this may be with our ideas and practice in this Western World, where we never plant a mixture of vines and corn and fruit trees, but each kind by itself: yet, as Dean Stanley informs us from his own observation, nothing is more common in Palestine than to see fig trees, thorn trees, and apple trees growing in vineyards, and even in corn-fields, wherever they can get soil to support them.

Fig trees are represented as growing on the Mount of Olives wild and on the open road-side. It was a tree growing thus by the way that our Saviour, on his early return to the great city, approached, hoping to find fruit thereon; and that, on finding none, He with one withering word converted into a visible parable for

the admonition of His followers. "This Mount, besides its abundance of olives, is to this day sprinkled with fig trees; they may still be seen overhanging the ordinary road from Jerusalem to Bethany," growing out of the scanty soil that covers the rocks or fills the crevices among their fractured ledges. Hence, again, we see how consonant with nature, even in its incidental allusions, is the Gospel narrative: *Now in the morning, as He returned into the city, He hungered. And when He saw a fig tree in the way, He came to it, and found nothing thereon, but leaves only, and said unto it, Let no fruit grow on thee henceforth forever. And presently the fig tree withered away.*

We meet in the Saviour's teachings with two allusions of a meteorological nature. One of these has reference to the Rain: *When ye see a cloud rise out of the west, straightway ye say, There cometh a shower; and so it is.*

✱ "In the forty-three days," says Tristram, "during which rain fell in 1863-64, the wind was invariably *west* or *south-west*." The other reference is to the Temperature: *When ye see the south wind blow, ye say, There will be heat; and it cometh to pass.* "The south wind," says the authority just quoted, "is always oppressive, at whatever time of the year it blows. We had two days' *sirocco* with the south wind in November, again on January 14 and 15, March 1 and 2, April 21 and 25, May 15, 16, 26 and 27. These were the only occasions on which there was south wind, and on each occasion the *sirocco* was most oppressive." *

* *Natural History of the Bible*, p. 33.

We need not multiply particular instances of this nature any further.—We have now presented sufficient evidence and illustration of the intimate connection and complete correspondence of the *Imagery* of the Gospel History, throughout, with the natural features and productions and usages of Palestine, as found at this day.

We have seen that the instructions of Jesus were delivered in connection with facts of Geography and features of Nature, which still lie beneath the broad light of day; and were drawn from sights and sounds which may still be seen and heard. Here is nothing that savors of myth or legend.

We have seen that the Divine Master's teachings received their form, and that even his thoughts took their color from the natural objects and scenery with which he was surrounded; and hence it is that so many have testified, that nowhere do his illustrations and parables acquire such force and vividness as when read upon the spots where they were uttered. We have seen that the wonderful lessons of the Great Teacher are so intimately involved in the conditions and characteristics of the localities where they were delivered, that an actual examination of those localities by the most competent and trustworthy of men in our own day has resulted in the most complete confirmation of the truth and accuracy of the Gospel History that the nature of the circumstances will admit.

In one word, the survey we have taken in this chapter renders it sufficiently evident, that as the engraved seal fits into its own impress in the wax, so fits the

History which the Evangelists have given of Jesus of Nazareth to the form and features, the conditions and characteristics of the Land in which He dwelt.

H. B. Tristram concludes his journal of travels throughout Palestine, undertaken in company with a corps of scientific men, with special reference to the Geology, Physical Geography, Botany and Zoology of the country, with the following unqualified and decisive testimony—and we could not wish to close the present volume with words or sentiments more appropriate: “The primary object of our journey was the investigation of physical and natural history, not, however, to the exclusion of other objects of interest. We passed through the land with our Bibles in our hands,—with, I trust, an unbiased determination to investigate *facts* and their independent bearing on sacred history. While on matters of science the inspired writers speak in the ordinary language of their times (the only language which could have been understood), I can bear testimony to the minute truth of innumerable incidental allusions in Holy Writ to the facts of nature, of climate, of geographical position—corroborations of Scripture, which, though trifling in themselves, reach to minute details that prove the writers to have lived when and where they are asserted to have lived; which attest their scrupulous accuracy in recording what they saw and observed around them; and which, therefore, must increase our confidence in their veracity, where we cannot have the like means of testing it. I can find no discrepancies between their geographical or physical statements and

the evidence of present facts. I can find no standpoint here for the keenest advocate against the full inspiration of the scriptural record. The Holy Land not only elucidates but bears witness to the truth of the HOLY BOOK.*

Even intelligent Unbelievers, after the most thorough examination of the ground for themselves, while they will not receive Christ with the heart, and refuse to yield their minds to the dominion of the spiritual truth which He taught, find themselves constrained to admit that the Gospel histories are unquestionable records of actual events—of the travels, and deeds and sufferings of the great and notable Teacher of Galilee. In the Introduction to Renan's *Life of Christ*, we find this very extraordinary testimony to the truth of the evangelic history—a testimony which none will suspect of being biased in favor of its Divine claims: "I have traversed in every direction the district where the scenes of the Gospel are laid. I have visited Jerusalem, and Hebron, and Samaria. Almost no site named in the story of Jesus has escaped me. All this narrative which at a distance seems to float in the clouds of an unreal world, thus assumed a body, a substantial existence, which astonished me. The striking coincidence of texts and places, the wonderful harmony of the ideal of the Gospels, with the country which served as its frame, was for me a revelation. I had before my eyes a *Fifth Gospel*, and thenceforth through the stories of Matthew and Mark, instead of an abstract Being who one might say

* *Land of Israel*, p. 640.

had never existed, I saw in life and movement a human form that challenged admiration."

To this the writer would add his own humble testimony, that after having spent years in exploring every province of the dreary region of scepticism, he has not only found nothing to weaken his faith in the Sacred Volume, but, on the contrary, much everywhere to strengthen it. And he now lays down his pen with no more doubt that its truths were given by inspiration of God, than he has that the movements of the Planetary System are governed by the Laws of Gravitation. He accounts the teachings of Jesus as the sublimest philosophy within the reach of mortals, and the prospect of the *Eternal Life* which He has revealed as the source of the highest joy and of the most elevating hope to which man can attain in the present world.

"Before thy mystic altar, HEAVENLY TRUTH,
I kneel in manhood as I knelt in youth.
Thus let me kneel, till this dull form decay,
And life's last shade be brightened by thy ray:
Then shall my soul, now lost in clouds below,
Soar without bound, without consuming glow."

GLOSSARY.

ABERRATION, deviation from a straight line.

Ad libitum, without limit, without restriction.

A fortiori, much more, or with stronger reasons.

AMMONITE, a fossil shell fish, allied to the existing pearly nautilus.

AMPHIBIANS, animals that live both in air and water.

ANATOMY, the art of separating the parts of animal bodies.

ANGIOSPERMOUS, having the seed enclosed in a pod.

ANTHROPOLOGY, a discourse or treatise on human nature.

ARBORESCENT, resembling a tree.

ARCHÆOLOGY, a discourse or treatise on antiquities.

ASTEROIDS, the smaller planets.

AUTOCHTHONES, primitive inhabitants, aborigines.

BATRACHIANS, animals of the frog kind.

BOTANY, the science of vegetables.

CALAMITES, plants with jointed stems or trunks.

CAMBRIAN, one of the lowest and oldest of rock formations.

CANINE, pertaining to dogs.

CARBON, pure charcoal.

CARBONIFEROUS, producing carbon or coal.

CATACLYSM, a deluge.

CENTAURI, part of a southern constellation.

CEPHALOPODS, the highest class of molluscan fish.

CETACEANS, animals of the whale kind.

CHELONIANS, animals of the turtle kind.

CHROMATIC, relating to color.

CORNEA, the transparent membrane of the eye.

CRANIUM, the skull.

CRETACEANS, animals belonging to the Chalk Period.

CYGNI, a group of stars.

DEVONIAN, the lowest member of the Secondary Rocks.

DINOTHERIUM, an extinct animal resembling the elephant.

EFT, a newt, or lizard.

ELOHIM, God, Jehovah.

EMBRYOLOGY, the science of animal rudiments in the egg or womb.

EPIDERMIS, the cuticle or scarf-skin.

ETHNOLOGY, the study of nations.

EURIPTERUS, a crustacean of the Silurian Period.

FACULÆ, bright spots or ridges.

FÆCES, excrement.

FŒTICIDE, the crime of killing the young in the womb.

FŒTUS, the unborn babe, an embryo in course of development.

FORAMINIFERA, very minute animals forming calcareous shells.

GANOIDS, fishes with shining scales, now nearly extinct.

GLACIAL EPOCH, a period when the greater part of the earth's surface was covered with ice.

GLOTTIS, the narrow opening at the upper end of the wind-pipe.

GONIAITITES, fossil fishes resembling the nautilus.

GYMNOSOPHIST, an Oriental philosopher.

HABITAT, natural place of habitation.

HERMAPHRODITE, a term denoting both sexes in the same animal.

HIEROGLYPHICS, mystical characters or symbols, particularly those found on Egyptian monuments.

HIPPARION, a fossil animal resembling the horse.

HOMO, the Latin word for man.

HUMERUS, the shoulder.

HYBRID, a mongrel, or a mixture of two species.

HYDROGEN, a gas which constitutes one of the elements of water.

HYDROSTATICS, the science which treats of the weight, motion and pressure of fluids.

ICHTHEOSAURIA, gigantic fishes having paddles like the whale's.

Inter se, one with the other.

INVERTEBRATE, without a back-bone.

Ipsa facto, in the very act, in reality.

Jeu d'esprit, witty conceit, witticism.

JURASSIC, a rock formation, so named from the Jura Mountains.

KOSMOS, the world, the universe.

LABYRINTHODON, a fossil reptile.

LARVÆ, insects in the caterpillar state.

LARYNX, the upper part of the windpipe.

LIAS, one of the secondary groups of fossiliferous strata.

LUMINIFEROUS, producing light.

MARSUPIALS, animals that bring forth their young in an embryonic state, and then carry them in an external pouch till they reach maturity.

METEOROLOGY, the science that treats of the atmosphere and its phenomena.

MINERALOGY, the science which treats of the properties of minerals.

MOLLUSCANS, soft-bodied animals, without skeleton or articulated covering.

MORPHOLOGY, the science which deals with the form or structure of animal organs, independent of function.

NEBULÆ, clusters of stars not distinguishable from each other.

NITROGEN, a gas, one of the elements of the atmosphere.

OOLITE, rock formations of the Secondary Period.

OPTICS, the science which treats of light and vision.

OXYGEN, a gas, the vital element in the air we breathe.

PALEONTOLOGY, the science of fossil remains.

PENETRALIA, the most sacred place within a temple.

PERMIAN, a formation of the Coal Period.

PHILOLOGY, the science of languages.

PHYSIOLOGY, the science of animal and plantal functions.

PLACENTALS, the highest class of mammals.

PLANETOIDS, the smaller planets.

PLATINUM, a bright and heavy metal.

PLEIADES, "the seven stars."

PNEUMATICS, the science which treats of air and gases.

PRINCIPIA, first principles.

PROGNATHOUS, forward prominence of the jaws.

RECALCITRATION, rebounding.

SATELLITE, a secondary planet, or moon.

SELACHIANS, cartilaginous fishes, such as the shark, ray, etc.

SENSORIUM, the seat of sense, the brain and nerves.

SHASTERS, sacred books of the Hindoos.

SILURIAN, a vast system of rocks of the Primary Period.

SIMIADÆ, the monkey class of animals.

SYNCHRONOUS, happening or existing at the same time.

TELEOLOGICAL, relating to final causes.

TRIASSIC, the lower formations of the Secondary Rocks.

TROGLODYTES, cave-dwellers.

VERTEBRA, a joint of the spine.

VERTEBRATA, animals having jointed backbones.

WADY, Arabic name for a dry valley.

WEALDEN, a rock formation of the Chalk Period.

ZOOLOGY, the science of animals.

ZOOPHYTES, bodies supposed to partake of the nature of both an animal
and a vegetable.

ZYGOMATIC, pertaining to the cheek-bone.

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